Pediatrics Supplement

Contributed by

The American College of Osteopathic Pediatricians

Volume 6
Number 1

June, 1953
Pages 1 to 21

Journal A.O.A.
Vol. 52, No. 10

PEDIATRICS SUPPLEMENT

The American College of Osteopathic Pediatricians

Editorial Office, 212 East Ohio St., Chicago, 11.
Address all communications to the Chicago Office.
Copyright, 1952, by the American Osteopathic Assn.

ARNOLD MELNICK, Philadelphia.....Editor

OFFICERS

PRESIDENT.....Arnold Melnick, Philadelphia
PRESIDENT-ELECT.....Patrick Philben, Dallas, Tex.
VICE PRESIDENT.....E. Jane Cunningham, Flint, Mich.
SECRETARY-TREASURER.....Otto M. Kurschner, Philadelphia

Volume 6 **June, 1953** **Number 1**

CONTENTS

EDITORIAL

Progress Report.
Arnold Melnick, A.B., M.A., D.O., Philadelphia..... 2

ARTICLES

Acute Myeloblastic Leukemia of Newborn. Case Report.
M. Michael Belkoff, D.O., Elizabeth, N. J., and Salvatore J. Rose, M.D., Newark, N. J. 3

Early Feeding of Supplemental Foods.
Nelson D. King, D.O., Boston..... 6

Thumbsucking: The Pedodontist's Viewpoint.
Morris Kelner, D.D.S., Philadelphia..... 7

Respiratory Emergencies in the Newborn.
Herbert R. Moskow, A.B., D.O., Philadelphia..... 9

Musculoskeletal Diseases in Children, with Special Reference to Therapy of Rheumatic Fever.
Everett C. Borton, D.O., Chicago.....14

Problems in the Use of Antibiotics in Pediatrics.
William S. Spaeth, D.O., F.A.C.O.P., Philadelphia.....17

Cranial Dysostoses.
Max Marcus, A.B., D.O., Allentown, Pa. 20

PROGRESS REPORT

Two recent developments in the American College of Osteopathic Pediatricians claim distinction as forward strides in the development of osteopathic pediatrics.

In April, 1953, the College initiated and sponsored a Conference on Pediatric Education, the first assembly of its kind. Its purpose in gathering together the pediatric representatives from the colleges was to discuss and crystalize all the present-day thinking in pediatric education in osteopathic schools. The hope was held that from it would come not unanimity of teaching, but a concerted effort and concrete plan to keep instruction on a high level and to initiate the steps necessary to improve it. The future alone will write the results of the Conference. The present can only record the accomplishment of its birth.

For the first time, the College is sponsoring for junior and senior students in osteopathic colleges an essay contest. Through the generosity of Dr. Ira W. Drew, once chairman of the Department of Pediatrics at the Philadelphia College of Osteopathy, it is able to award three prizes annually. In appreciation the contest has been named the Ira W. Drew Essay Contest.

The completion of a Pediatrics Supplement is each year an achievement of the College, and this marks its sixth year. A number of diversified topics are presented. This Supplement is offered with pride in the progress it records and in the continuance of an editorial tradition. It is hoped it will be valuable to the profession.

ARNOLD MELNICK, A.B., M.A., D.O.

Pediatrics Supplement
Vol. 6, No. 1, June, 1953

Acute Myeloblastic Leukemia of Newborn

Case Report*

M. MICHAEL BELKOFF, D.O.
Elizabeth, N. J.
and
SALVATORE J. ROSE, M.D.†
Newark, N. J.

This case is of interest because of its probable congenital origin. In addition only 23 prior cases have been reported.

CASE HISTORY

On October 22, 1952, a white female infant was admitted to the nursery at Memorial Osteopathic Hospital in apparently good condition. The color was good and the cry normal. The only abnormal finding was that of multiple dark gray splotches on the body, which appeared to be a rupture of small blood vessels under the skin. The child had been born at 5:30 that morning.

On physical examination at 10 a.m., the baby appeared to be well formed and well developed, weight 7 pounds, 2 ounces, length 20½ inches. The head was symmetrical with no masses or bruises. There was slight molding in the occipitoparietal area. The circumference of the head was 12¾ inches. The anterior fontanelle was 3¼ fingers in width; the posterior fontanelle, 1 finger. The pupils reacted well to light and distance, and the eyes were symmetrical. Ear, nose, and throat findings were negative. No teeth were present. The neck revealed no palpable masses, and the glands were not enlarged or palpable. The lungs were normal, breath sounds were clear with no rales or adventitous sounds. The heart was essentially normal, no enlargement was noticed, no murmurs were present, and the rate and rhythm were regular. No masses were disclosed in the abdomen, the liver and spleen were not palpable, and the cord was present and not bleeding. The external genitalia and external rectum were essentially normal. Moro reflex was present and all reflexes were within standard range. Ankle clonus was absent. There were no irregularities of the extremities. The skin presented peculiar bluish nodular infiltrations and some ecchymoses scattered over the body. There was no bleeding.

The infant's blood was type A, and the Rh factor was positive. There were no abnormal findings in the urine. X-ray examination showed the long bones to be normal. X-rays of the chest revealed no widening of the mediastinal shadow or compression of the trachea. There was nothing unusual in the lung fields. No pathologic changes were demonstrated in the thoracic cage. There appeared to be a shift of the gas shadows to the left indicating a possible enlargement of the liver.

The mother's pregnancy was complicated by a toxemia of a moderate degree but went to term. Delivery was spontaneous with quinine induction. There was no history of asphyxia or convulsions. There is another apparently healthy sibling in the family. The mother's blood was Rh positive. She had one miscarriage several years before. There was no history of any blood dyscrasias in the family but an operation on the mother had been postponed because of an abnormal white cell count. Upon repeated analysis the blood count was essentially normal. The blood count on the day of delivery revealed the following:

Hemoglobin	124%—19 grams
Coagulation Time	2 min.
Bleeding Time	1½ min.
Erythrocytes per cu. mm.	5,800,000
Leukocytes per cu. mm.	34,000
Blood platelets per cu. mm.	225,000
Differential Count	%
Lymphocytes	12
Mononuclears	0
Transitionals	10
Polymorphonuclear Neutrophils	50
Polymorphonuclear Eosinophils	0
Polymorphonuclear Basophils	0
Myelocytes	24
Myeloblasts	4

The child was put on Bremil feedings. The formula was taken very well and the temperature remained 99 F. throughout the day.

On October 23, physical examination of the child was essentially negative. There was no increase of the bluish pigmentation of the skin and no bleeding. The child was given aqueous pencillin, 150,000 units every 12 hours. She was taking her formula rather well, and the nursing reflex was good. Vitamin C, 100 mg. daily, was administered. Complete blood count revealed the following:

Hemoglobin	117%—18 grams
Erythrocytes per cu. mm.	5,470,000
Leukocytes per cu. mm.	47,000
Blood platelets per cu. mm.	250,000
Differential Count	%
Lymphocytes	14
Mononuclears	0
Transitionals	14
Polymorphonuclear Neutrophils	40
Polymorphonuclear Eosinophils	0
Polymorphonuclear Basophils	0
Myelocytes	27
Myeloblasts	5

On October 24 there was no apparent change in the physical condition of the child, and a complete blood count was again performed which showed the following:

Hemoglobin	114%—17.5 grams
Erythrocytes per cu. mm.	5,220,000
Leukocytes per cu. mm.	49,500

*Presented at a meeting of Region One, American College of Osteopathic Pediatricians, Philadelphia, December 7, 1952.

†Dr. Rose is attending pathologist at St. Michael's Hospital, Newark, N. J.

Differential Count	%
Lymphocytes	22
Mononuclears	0
Transitionals	15
Polymorphonuclear Neutrophils	28
Polymorphonuclear Eosinophils	3
Polymorphonuclear Basophils	0
Myelocytes	25
Myeloblasts	7

By October 25, the child had regained her birth weight but had difficulty in swallowing. Upon physical examination the skin was extremely dry, the liver and spleen were not palpable, and no lymphadenopathy was noted. The infant was extremely dehydrated and was given a hypodermoclysis. A bone marrow study of the tibia was performed. The findings of this examination were:

Leukoblastic Series:	Per Cent
Myeloblasts	11
Myelocytes	
Neutrophilic	63
Basophilic	—
Eosinophilic	—
Metamyelocytes	5
Prolymphocytes	—
Polynuclears (Mature)	3
Lymphocytes	4
Plasma Cells	1
Monocytes	3
Edothelial Leukocytes	—
Degenerated Cells:	
Lymphoid	3
Myeloid	4
Promyelocytes	2
Megakaryocytes	—
Monoblast	1
Erythroblast Series:	—
	100
Macroblasts	1
Normoblasts	7
Microblasts	2

Remarks: The bone marrow smears obtained from the tibia are not unusually hyperplastic, possibly because of some peripheral blood dilution. There are, however, sufficient cells for marrow evaluation. By far the majority of the leukocytes is derived from the granular series. The nuclear characteristics with fine chromatin, indentation, and frequent folding would tend to suggest that they are derivatives of the monocytic series. The large number of nuclei, however, tends to favor the myeloblastic cell. Vacuolizations are numerous and may be an indication of either blood dyscrasia or toxicity. Many of these cells have also been observed in the peripheral blood which is, of course, a bad prognostic finding. The reaction is either leukemoid or frankly leukemic but will have to be proved by subsequent studies since there is a possibility of neonatal intoxication resulting from toxemia of pregnancy or possibly drug (quinine) idiosyncrasy. The skin lesions apparently are not truly purpuric.

On October 26 the forehead of the child had a grayish-white appearance. The cheeks were dry and cracked, and she was coughing frequently. The vulva assumed a dark blue cyanotic color. The buttocks were excoriated, especially in the ecchymotic areas.

Because of the severity of the disease process in the infant and the limitations of the hospital, it was decided to transfer the child to a larger institution (St. Michael's Hospital, Newark, N. J.).

The day after admission the infant looked well, took formula well, and had no evidence of splenic and liver enlargement. The blood platelet count was 250,000 cells per cubic millimeter. That evening her temperature rose to 103 F. Physical examination revealed nothing unusual. The urine analysis disclosed 1 plus albumin but otherwise was negative.

On October 28 the blood platelet count was 82,000 cells per cubic millimeter. The bone marrow examined by the peroxidase staining method revealed many granulocytes.

On the following day the infant had a temperature of 100 F. and appeared critically ill. Her color was poor, and her abdomen was markedly distended. No vomiting was present. The infant was having bowel movements and peristaltic waves were audible. For the first time the liver was palpated about 3½ fingerbreadths below the costal margin, and the spleen 2½ fingerbreadths. There were necrotic areas about the buttocks. The complete blood count is given here:

Hemoglobin	18 grams
Erythrocytes per cu. mm.	5,500,000
Leukocytes per cu. mm.	22,200
Differential Count	%
Lymphocytes	13
Mononuclears	0
Transitionals	7
Polymorphonuclear Neutrophils	18
Polymorphonuclear Eosinophils	0
Polymorphonuclear Basophils	0
Myelocytes	30
Myeloblasts	4
Atypical	4
Juveniles	24

At this time the infant was given 25 mg. of ACTH with the intention of administering 50 mg. daily for 10 days or a total dose of 500 mg.

On October 30, 1952, the infant became very dyspneic and the distention of the abdomen increased. She began to vomit "coffee ground" fluid in large amounts and finally expired. The blood platelet count was 80,000 cells per cubic millimeter.

NECROPSY REPORT

General Appearance.—The body was that of an 8-day-old white female child appearing acutely ill, showing multiple ecchymoses and nodulations of the skin of the entire body. Rigor mortis had not yet developed. There were areas of postmortem lividity over the back and buttocks. There was an acute necrotizing process involving the vulva and perineal tissues and resembling that seen in decubitus ulceration. The definitely palpable liver extended well below the costal margin on the right with slight enlargement of the spleen. Lanugo was present over the extremities.

Head and Neck.—Except for the ecchymosis and purpura of the skin the head and neck were normal on external examination.

Thorax.—

Pleural Cavity: There was no free fluid found in either cavity.

Thymus: The findings were normal.

Heart: Punctuate hemorrhages were seen on the pericardial surface. The contour of the heart was normal. Its muscle, however, presented a rather pale color, presumably due to leukemic infiltrations. All of the cardiac chambers were lined by smooth, glistening endocardium showing the same pallor observed in the epicardium. There were no imperfections of the septa. The valvular orifices were competent. There were no vegetations. Small endocardial hemorrhages were in evidence.

Great Vessels: There were no congenital anomalies.

Lungs: Both lungs were studded with petechial hemorrhages. There were massive hemorrhages involving the middle and lower lobes of the right lung and the left lower lobe.

Abdomen.—

Peritoneal Cavity: There was a normal fluid content in the peritoneum. The peritoneal tissues were studded with petechiae, but otherwise were normal.

Liver: The liver was moderately enlarged and extended about 3 fingerbreadths below the costal margin. The enlargement was noted in the right lobe. The organ appeared cyanotic, with considerable congestion obscuring many of the markings. There was a smooth capsule. The lobular arrangement was accentuated by a mottled gray appearance more pronounced on the subsurface of the organ because of leukemic infiltrations. On sectioning the liver this mottling was clearly defined in the dependent portions of the organ and appeared to be situated about the portal canals. There was no evidence of cystic change or fibrosis.

Gallbladder: This organ was normal.

Spleen: This organ, although palpable externally, did not appear very large. The capsule enveloped a pulp in which the malpighian follicles were completely obscured by the pulp hyperplasia. There was no accessory spleen.

Pancreas: Findings were normal.

Kidneys: These organs were both pale. The surfaces showed the usual fetal lobulations. On section, the pallor was diffuse throughout the entire parenchyma, giving the impression of widespread leukemic invasion. The pelvic tissues were not hemorrhagic nor were there any evident pathologic conditions of the ureters.

Adrenals: These glands were prominent in the upper poles of the kidneys and consisted of soft abundant cortical tissues with little medullary substance. There was no evidence of adenoma formation. No hemorrhage could be demonstrated in either gland.

Gastrointestinal Tract: The esophagus seemed to be normal in length and caliber. There was abundant partly digested blood in the gastric lumen. The mucosa showed no definite evidence of hemorrhage. There were no ulcers. Both pylorus and duodenum were normal except for a small amount of bloody contents. No demonstrable pathologic states existed in either the small or the large intestine.

The sigmoid and rectum, except for some redundancy of the former, were essentially normal.

Lymphatic System: There were no enlargements of the mediastinal nor peribronchial nodes. The mesenteric group showed some prominence but was not unusually enlarged.

The skull and brain were not examined.

GROSS ANATOMIC DIAGNOSIS

Acute myeloblastic leukemia

Leukemic infiltrations of skin, lungs, heart, liver, spleen, kidneys, et cetera

Multiple ecchymoses and nodulations of skin

Mild mesenteric lymph adenopthy

Necrotic ulceration of vulva and perineal tissues

Massive hemorrhages of lungs

Petechial hemorrhages of heart

Gastric hemorrhages

Cause of death: Pulmonary and visceral hemorrhages due to acute myeloblastic leukemia.

SUMMARY

This female was delivered in a hospital and attended by a pediatrician because of a generalized skin eruption primarily diagnosed as purpura. In the course of laboratory investigation the blood count revealed a leukocytosis of approximately 30,000 with the presence of many cells interpreted by the technician as myelocytes. Hemoglobin and the erythrocyte count were normal. Pathologists' consultation and bone marrow study resulted in a diagnosis of leukemia of an immature type, but with a leaning toward the myeloblastic form. This impression was confirmed by later study supported by peroxidase staining. The child was transferred to a larger hospital on the fifth day following birth. The skin manifestations were accompanied by some respiratory distress and toxemia of moderate degree.

Maternal history revealed one miscarriage several years previously but no definite blood dyscrasia, except that an operation on the mother had been postponed because of an "abnormal white blood count." Subsequent counts gave normal findings.

There was some question concerning the true nature of the infant's skin lesions which, because of their elevated character, were suspected of being allergic rather than purpuric. On the seventh day of life a repeat blood count showed a high hemoglobin and erythrocyte count and leukocytosis which seemed to be evidence of leukemia. The platelet count of 250,000 on the fifth day fell to 82,000 the day before the child's death. This was the only consistent finding, other than the leukocytosis, to support leukemia. ACTH therapy was begun but the child's condition suddenly became worse, and she expired the following day. The liver and spleen, which had been nonpalpable, could be felt in the terminal stage.

The autopsy findings were typical of acute leukemia. There were multiple hemorrhages of the viscera, an enlarged mottled liver, some splenomegaly, and mesenteric lymph adenopathy.

In the microscopic examination there were showers of leukemic infiltrations in all the viscera. The skin sections showed typical lymphoblastoma. Hemorrhages were numerous, affecting chiefly the lungs. There was little question of the primitive, immature, myeloblastic nature of the blood cells invading the organs.

This case is of special interest because of the age of the patient and the possibility of a congenital nature of the process.

Memorial Osteopathic Hospital
528 Morris Ave.

Journal A.O.A.
Vol. 52, No. 10

Early Feeding of Supplemental Foods*

NELSON D. KING, D.O.
Boston

The time to add solid food to the infant's diet is when he is prepared for it. To state categorically that he is prepared to take solid foods at 1 month, 6 weeks, 8 weeks, 12 weeks, or 16 weeks is obviously impossible. We all see children who will not take chopped food even at 14 months because they are not prepared for it. The infant's preparation depends upon three factors:

1. Physical demands
2. Physiologic ability
3. Psychologic acceptance.

A discussion of each factor is necessary.

PHYSICAL DEMANDS

As physicians, we treat the individual infant. We know by experience that there is no "book infant." All infants have their own demands. Some are hypertonic with very high caloric requirements while others are hypotonic and are low in their demands. Recently, in our clinic, members of the resident staff were called in to see an infant on the examining table and were asked how old they judged him to be. Almost all said he looked to be about 4 months old. Actually he was 6 weeks old, but he was a big baby, and his physical demands were great. He needed to be fed in accordance with his size and requirements rather than his chronologic age. If such an infant was fed "by the book," parents and physician would have constant trouble with a colicky, fussy infant.

Thus it should be borne in mind that an infant 6 to 8 weeks old many times has the physical requirements of one twice his age, or more. Milk alone does not seem to satisfy him. A formula of 25 to 30 calories per ounce could be made, of course, but this does not seem to answer his needs. The addition of solid foods produces a happy child and, just as important, happy parents. The demand for vitamin B and iron is not met by a milk diet, because milk for formulas has been heated. Evaporated milk has been heated to at least 240 F. for 15 minutes.

Vitamin B is essentially heat labile, and in formula preparation 10 to 20 per cent of the amount in milk is destroyed. Evaporated milk stored 8 months loses up to 40 per cent of its vitamin B content. The average lapse of time from production to the use of evaporated milk is 3½ months. Therefore, vitamin B must be added to the diet of the formula-fed infant. Breast-fed babies are usually no better off because the average adult diet contains only suboptimum amounts of thiamine. In order to meet the infant's requirements of vitamin B, his milk diet must be supplemented with egg yolk and generous quantities of fruits, vegetables, and whole grain cereals which also supply the iron needed. Both cow's milk and human milk contain very small amounts of iron.

In the premature infant I have found it very advantageous to feed solid foods early. Calorically they need the help and their physical demands for vitamins and minerals are larger than those of full-term infants. Being smaller, premature infants have less blood. Less blood means less excess hemoglobin to break down and smaller amounts of iron to be stored for future use. If their nutritional requirements are neglected, premature infants can be expected to become anemic.

PHYSIOLOGIC ABILITY TO HANDLE FOOD

Consideration of ability to handle food requires discussion of proteins, carbohydrates, and fats, and their digestion and absorption in the infant. The newest knowledge is very complex but a general summary will serve as a guide to the physiologic ability of infants under 3 months of age to digest and assimilate solid foods.

The gastrointestinal tract in the infants shows greater development of secretory and absorbing surfaces than of supporting musculature. An adequate group of enzymes of all simple foods except starches appears to be available even before premature birth. Pancreatic amylase is deficient for some months of early infancy, and this deficiency exists almost up to the sixth month. During this period there are between 0 and 20 activity units per cubic centimeter. After 6 months, it increases slowly so that 200 units are present by 5 years of age. Therefore, as amylase is low after as well as before 3 months, its importance is not confined to feeding in the first 3 months of life.

The output of hydrochloric acid in the stomach is strikingly high for a short period after birth, but soon drops to a level that remains steady, therefore the amount is the same for infants under and over 3 months of age. As a matter of fact, the free hydrochloric acid level is the same in the average adult. Pancreatic enzymes other than amylase, trypsin, and lipase are at the same relative levels at 2 to 4 weeks after birth as they are at 5 months, and are physiologically sufficient. Pepsin, rennin, and ptyalin are present at birth and may be demonstrated in the gastric juices.

From the above it is obvious that the physiologic factors necessary for digestion of foods other than milk are present under 3 months of age. It is necessary that another physiologic factor, absorption ability, also be present.

Anatomically, the intestinal tract of the infant is able to absorb food quickly and easily. The absorptive surfaces in the infant and newborn are completely developed and are not different in cellular elements from the same structures in the adult. Physiologically assimilation and metabolism are the next steps after absorption. The infant seems to have the greatest facility in dealing with proteins. Amino acids appear in the blood in about the same concentration that they attain in older infants. The ultimate utilization of amino acids is best shown by the nitrogen balance in infants which is comparable to that of older children.

Carbohydrate metabolism is best measured by blood sugar studies, which show that infants readily utilize glucose. The carbohydrate of the diet should be less complex than a starch and if this precaution is observed a large proportion of the food may be made up of carbohydrate. For the first few months of life hypoglycemia is almost physiologic, so fear of hyperglycemia in infants is unfounded, and practically im-

*Presented at the meeting of the American College of Osteopathic Pediatricians, Atlantic City, N. J., July 12, 1952.

possible to attain in most infants. Less is known of fat than of protein and carbohydrate metabolism. One reason is that fat does not lend itself well to measurements of absorption, which are based upon the difference between the fat in the food and that found in the feces. Because fecal fat comprises excreted fat as well as unabsorbed residue, it can be seen that such measurements are inaccurate. It also must be remembered that the body makes fat from protein and carbohydrate. Clinically, I have observed that most infants get along better with low than with high fat intakes. Therefore, clinical experience should probably be the guide and fat intake kept at a lower level in the first few months of life than at any other time.

PSYCHOLOGIC ACCEPTANCE

When speaking of psychologic acceptance, I refer to acceptance by the parents as well as by the child. Most parents ask for supplements to the milk diet for their babies by the time they are 6 to 8 weeks old. Many ask because another child in the neighborhood has had foods at that age, and others ask because they think the infant is hungry. Psychologically then, most parents are ready early. If the physician dogmatically says, "No—wait until after 3 months," the mother has to have tremendous faith in his judgment or she will go ahead and feed the infant anyway. As to the infant's acceptance, that is usually easy. Most infants, like birds, merely open their mouths and take what is offered them. This offering should be well back on the tongue, however, or as the infant brings his tongue forward and attempts to swallow the food he will spill some out of his mouth. The interpretation might be that he he has refused it.

Most first foods are offered in amounts of 1 teaspoonful and slowly increased to the point where from 1 to 2 tablespoonfuls are being given twice a day at 3 months of age. Fruits are usually accepted easily, as are soups and strained vegetables and meats. Cereal is not always acceptable, but if mixed with fruit it usually goes well. All foods should be offered in as pure a form as possible so that if any question of allergy arises, the offending substance can be easily detected. For this reason pure cereals, such as rice, barley, and wheat are offered first instead of those made of mixed grains.

Much is accomplished psychologically with early feeding. As stated above, most infants accept what is offered at this age. They then become conditioned early to the texture of foods in the mouth and this allows for addition of chopped food to the diet before the rebellious age begins.

SUMMARY

There are definite physical demands for supplements in feeding of some infants under 3 months of age. Physiologically the infant can manage early feeding of added protein, simple carbohydrates, and some fats. Psychologically some parents and infants readily accept early additions to the diet and are often annoyed by delay into the third month.

358 Commonwealth Ave.

REFERENCES

Jeans, P. C., and Marriott, W. M.: Infant nutrition. Ed. 4. C. V. Mosby Co., St. Louis, 1947.

Smith, C. A.: The physiology of the newborn infant. Ed. 2. Charles C Thomas, Springfield, Ill., 1951.

Watson, E. H., and Lowery, G. H.: Growth and development of children. Year Book Publishers, Chicago, 1951.

Thumbsucking: the Pedodontist's Viewpoint*

MORRIS KELNER, D.D.S.
Philadelphia

Within recent years, the health professions have become highly specialized. Through conferences and discussions, the practitioners of the various specialties have been able to solve problems which heretofore had been quite perplexing. Much has been accomplished, but still more remains to be done.

The problem of the thumbsucking child has yet to be solved. There have been frequent panel discussions on this subject, and when the panel has consisted of a pediatrician, a psychologist, and a pedodontist, there has seldom, if ever, been any unanimity of opinion. Invariably, there have been expressed three authoritative but divergent opinions. The net result is that the parents of thumbsuckers still remain in a dilemma. Shall they permit their child to continue to suck his thumb? Shall they attempt forceably to break their child of this habit? Or, shall every thumbsucking child and his parents be psychoanalyzed?

The shape of the face, jaws, and dental arches is achieved by mutual interaction of various factors, namely, heredity, growth influences, and function. However, the end result can be and only too often is modified by disease, pressure, and trauma. Since the deleterious effect of thumbsucking can be classified under pressure and trauma, it would be apropos to point out at this time how thumbsucking can adversely affect the final conformation of the dental arches.

Noyes[1] has put it very simply: "The teeth are extremely mobile units in the masticatory mechanism. Their position, once their form and location is determined by heredity, growth and development, is maintained by the myriad of fibres of the peridental membranes. This membrane is calcified on the root side into the cementum of the tooth, and on the alveolar aspect into the spicules of alveolar bone. Through this membrane, pressures are easily transmitted from the tooth crown to the supporting bone. The alveolar bone is peculiarly responsive to these pressures which bring about adaptive changes in the bone architecture. Thereby the tooth position is continually determined by environmental forces. In other words, a tooth is not held in the substance of the jaws like a post cemented in a posthole, but rather it is swung like a hammock in a specialized bone structure which responds to inherent physiological, as well as extraneous pressure. As little as 50 grams of pressure, operating continuously over a period of 12 hours, will produce a measurable displacement of a tooth. It is well to keep in mind that the mechanical pressures of an

*Presented at the annual meeting of the American College of Osteopathic Pediatricians, Atlantic City, N. J., July 12, 1952.

orthodontic appliance will move teeth at the rate of one or more millimeter a month.

"As we have come to appreciate the ease with which the teeth may be shifted in their bony support, we are in a better position to understand the importance of the soft tissue pressure which affects the integrity of the dental arches."

Massler[2] divides the thumbsucking child into three age levels: (1) Postnatal—or from birth to 2 years of age; (2) preschool child—or from 2 to 5 years of age; and (3) school age child—or from 6 years of age to 12. At the postnatal age, thumbsucking need not be considered pathologic. Thumbsucking at the preschool age can be considered semipathologic. At school age and beyond, it should definitely be considered pathologic.

The thumbsucking of the infant need not be the concern of the pedodontist. Generally, no physical defect will result which will affect the positions of the teeth and the formation of the jaws at this age level.

The preschool child, from 2 to 5 years of age, will occasionally suck his thumb, especially when tired. When this thumbsucking appears as a persistent and damaging habit, it should be regarded as different from the thumbsucking of the infant.

For thumbsucking at 6 years of age and over, remedial measures should be instituted. It has been shown above how the pressure created by thumbsucking can have injurious effects upon the alignment and the occlusion of the teeth. However, injury does not always stop with the teeth. It may result in associated detrimental effects which, briefly, are as follows:

1. It can cause abnormal development of the maxilla, the mandible, or both, depending upon the position of the thumb in the mouth.

2. Thumbsucking can cause a pulling forward of the premaxilla, which can result in a high palatal vault, deviation of the nasal septum, and resultant mouth breathing.

3. Thumbsucking can result in open-bite deformities by predisposing a tongue thrust habit. An open bite can lead to a short underdeveloped upper lip. Mouth breathing can develop which may tend to inhibit chest development. Mouth breathers are prone to respiratory infections.

4. The thumbsucking habit can be considered a factor influencing overgrowth and enlargement of the tonsils.

5. It nearly always displaces the teeth and can cause a constriction of both dental arches.

6. The central incisors, because of their being displaced anteriorly from their normal positions, are much more vulnerable to fracture from a fall or blow.

7. Associated finger habits, such as hooking the finger over the nose or pulling on the ear, may also have deleterious effects on the organs involved.

8. The thumbsucking habit may cause a cross bite to develop with a resultant facial asymmetry.

Thumbsucking can develop into a serious habit as a result of some emotional need or disturbance. In this case, psychiatric consultation should be considered. However, if the habit persists after the emotional imbalance has been corrected, it should then become the pedodontist's responsibility. He can attempt treatment as follows:

1. Negative suggestion therapy (Parents are directed to take the thumb out of the child's mouth or constantly remind or command the child to do so.)

2. Positive suggestion therapy (Parents are directed to force the child to leave the play he enjoys to stand in front of a mirror and suck his thumb for a stated period of time. This may cause the habit to change from a pleasurable experience to something depriving the child of pleasure, and thus make the thumbsucking distasteful.)

3. Finger nail polish (If the child is a girl, being allowed to wear nail polish for not sucking her thumb may appeal to her vanity.)

4. Bad tasting medication painted on the thumb to discourage the habit

5. Showing the child unaesthetic effect of protruding teeth and corrective orthodontic appliances

6. Intraoral appliances (Various prosthetic and orthodontic appliances can be utilized to advantage. These appliances are constructed as reminders and to interfere with thumbsucking. They may have small projecting spurs that will create discomfort when the thumb is firmly pressed against them, but serve primarily as a reminder that the thumb is in the mouth again. They tend to bring the habit from the subconscious to the conscious.)

Appliances can be constructed to prevent actual contact between the thumb and the palate. Orthodontic bands which carry a meshwork of wires can be utilized in this type of appliance. The wires are so placed that there will be 1 or 2 mm. of space between the appliance and the palate. When the thumb is inserted, tight contact between the thumb and palate is prevented. When the child is unable to derive the pleasure from vigorous sucking, the habit may tend to disappear.

Partial dentures with attached spurs, rather than fixed orthodontic appliances, may also be used to advantage. However, they are best suited to the older child.

SUMMARY

1. The parent of the thumbsucking child is in a quandary as to how to solve the problem satisfactorily.

2. The positions of the teeth within the dental arches and the formation of the jaws and facial profile can be readily and adversely affected through the constant pressure of thumbsucking.

3. Thumbsucking is undesirable at any age but should receive serious consideration if the child is 2 years of age or older.

4. Thumbsucking should be the concern of the parent and the pediatrician. If there is evidence of an emotional imbalance, psychiatric aid is indicated. If the thumbsucking persists after psychiatric consultation, it should be the pedodontist's responsibility to utilize appliance therapy if necessary as a means of terminating this habit.

CONCLUSION

The parent, the pediatrician, the psychologist, and the pedodontist are all charged with the responsibility of assuring a greater percentage of well-developed and normal, functional dental mechanisms in children. In so doing they would play a fuller role in safeguarding the health of the citizens of tomorrow.

1930 Chestnut St.

REFERENCES

1. Noyes, F. B.: Textbook of dental histology and embryology. Ed. 3. Lea & Febiger, Philadelphia, 1921.
2. Massler, M., and Wood, A. W. S.: Thumb-sucking. J. Dent. Children 16:1-9 (first quarter) 1949.

Pediatrics Supplement
Vol. 6, No. 1, June, 1953

Respiratory Emergencies in the Newborn*

HERBERT R. MOSKOW, A.B., D.O.
Instructor in Pediatrics
Philadelphia College of Osteopathy
Philadelphia

Since 60 per cent of the deaths among full term and premature infants are due to anoxic injury and the percentage for neonatal morbidity is about the same,[1] and since 79,000 neonatal deaths occur each year of which 28,000 (36 per cent) are due to respiratory difficulties,[2] it is extremely important to know as much as possible about fetal anoxia.

The establishment of pulmonary respiration at birth, to replace the fetal mechanism of gaseous exchange in the placenta, constitutes the newborn's most urgent and vital adjustment. Most infants breathe spontaneously or within 3 to 5 seconds, but some may require as long as 15 seconds.[3]

The following classification of anoxia, with some modifications, is generally used in the literature:

1. *Anoxic Anoxia.*—
   a. Fetal, which can be relieved by oxygen, caused by obstruction to the umbilical cord, anesthetic gases administered to the mother, lowering oxygen tension of the maternal blood, lowering of maternal blood pressure from spinal analgesia, pulmonary or circulatory disease of the mother
   b. Neonatal, due to poor aeration of the newborn's lungs because of central nervous system injury, poor development of the bony thorax, resistance of lung tissue to expansion, cardiac enlargement, and anomalies
2. *Stagnant Anoxia.*—
   a. Fetal—highly unlikely
   b. Neonatal—due to chilling, circulatory weakness, shock, the effect of any of the other forms of anoxia
3. *Anemic Anoxia.*—
   a. Fetal—very unlikely
   b. Neonatal—due to massive hemorrhage or methemoglobinemia.

ETIOLOGY

De Sanctis and Varga[3] speak of anoxia as being of central or peripheral origin or both.

The respiratory center needs oxygen in order to respond to the proper stimulus, carbon dioxide. The chief element in the chemical regulation of respiration is the concentration of the stimulant material within the cells of the respiratory center. This depends on three factors: (1) concentration of the stimulant in the arterial blood, (2) rate at which the stimulant material is produced in the cells of the center, (3) rate of blood flow through the center, determining the degree of accumulation of the stimulant material. In short, the respiratory center requires an adequate amount of oxygen in order to respond with the adequate amounts of the respiratory stimulant, carbon dioxide.

The main cause of failure of the central mechanism is general or local cerebral anoxia. Anoxia may produce an accumulation of carbonic and lactic acids. This acidosis in turn may result in progressive states of excitation, discharge of energy, and, finally, exhaustion of nerve tissue. The acidosis produces a loss of tone and dilatation of the heart muscle, plus a loss of tone and a dilatation of the blood vessels, with a liberation of plasma and hemorrhaging from the blood vessels; in other words, congestion, edema, hemorrhage, death of tissue.

Intrauterine anoxia occurs with partial separation of the placenta (65 to 90 per cent fatalities), infarcts, degenerative changes in the placenta, changes produced by incompatibilities of blood groupings, calcifications in the decidua, thrombosis in the decidual sinusoids, knots in the cord, compression or thrombosis of the cord. Intrauterine anoxia may cause death of the fetus before birth; or, if born alive, the infant has a decreased ability to adjust to the tremendous changes involved in its new environment.

Serious anoxia may also be due to a depression of the maternal circulation by sedative, analgesic, or anesthetic drugs or gases. Inhalation of nitrous oxide for more than 3 minutes will cause a severe depression of the infant's respiratory mechanisms. Anoxia may occur because of local cerebral pressure due to prolonged labor, intracranial hemorrhage, direct trauma to the fetal brain, or even tetanic contractions caused by injection of pituitrin. A serious disease of the heart or lungs of the mother may also cause fetal anoxia.

Eastman[4] points out that Andros, at the Chicago Lying-In Hospital, in 719 cases, showed that the systolic blood pressure dropped below 80 in 13.7 per cent of mothers receiving saddle block anesthesia, and Hingson, at the Lying-In Unit of the Pennsylvania Hospital reported that 10 per cent of 2,457 patients getting continuous caudal analgesia had systolic pressures below 80 mm. of mercury for many minutes during labor. He says it is conceivable that the resting and contracting uterine tone is sufficiently greater than the arterial pressure to cause a fetal anoxia. Poor obstetric management during delivery, for instance, too much gaseous anesthetic, too much analgesic, or the careless and unobserved use of caudal analgesia, may be listed as a cause of fetal anoxia.

When infants were born by natural means, 90 to 95 per cent cried and breathed spontaneously.[1] All authorities agree that since the advent of analgesia and anesthesia, there has been an increase in the number of "slow" babies. Clifford[1] cites Cole who states that with satisfactory analgesia 75 per cent breathe spontaneously within 30 seconds—the initial gasp is in 2 seconds, the cry is in 5 seconds, and regular respirations are established in 10 seconds after the head is born. The situation is considered abnormal if breathing does not occur within 30 seconds. Cole also says 10 per cent have delayed respirations, with 15 per cent requiring resuscitation. Clifford records 5 to 10 per cent and Torpin 7 to 10 per cent.[1]

Asphyxia and atelectasis can occur despite an intact cerebral mechanism. They can occur when air cannot reach the pulmonary alveoli and when foreign matter has been aspirated into the trachea, bronchi, and bronchioles during the first inspirations. Other causes

*Presented at the meeting of District One, American College of Osteopathic Pediatricians, New York City, March 27, 1953.

of disturbances in the peripheral respiratory mechanism are compression of the trachea (cystic hygroma of the neck), congenital goiter, mediastinal tumors, malformations of the mouth, pharynx, and larynx (choanal atresia, micrognathia and microglossia, atresia of the larynx), tracheoesophageal fistula, agenesis of the lung, congenital cystic lung, diaphragmatic hernia, enlarged heart, weakness of the muscles of respiration, softness of the thoracic cage in premature infants so that negative pressure cannot be developed, and paralysis of the diaphragm.

Trauma to the brain has been mentioned, but actual tears in the falx or tentorium, or tensions between the movable brain and the fixed bony structures, causing occlusion or thrombosis in the vein of Galen or the superior cerebral veins, may cause softening or hemorrhage.

A combination of the central and peripheral factors is not uncommon. When central depression is accompanied by general loss of muscle tone and reflexes, absence of the gag reflexes causes easier aspiration of foreign matter. On the other hand, faulty peripheral respiratory mechanism interferes with the free passage of air to the alveoli which will cause anoxic depression of the respiratory center, starting a vicious circle.

Neonatal cyanosis may be due to the infant's inability to expand the alveoli. Wilson and Farber, cited in Zuelzer,[5] showed that the initial effort which is required to expand the fetal alveoli is greater than that needed to maintain the tidal flow of air in the expanded lung; the cohesion of the moist surfaces must be overcome, and a relatively large negative pressure is required for this—25 to 30 cm. of water are necessary to inflate the lungs, while 10 to 15 cm. will keep them inflated.

Amniotic fluid in small amounts is normally found in the alveoli, but large amounts could interfere with the free passage of the gases involved in respiration. Russ and Strong[6] found 1 to 2 cc. of mucous material aspirated from normally delivered infants, and 3 to 10 cc. from infants delivered by cesarean section. They found the fetal death rate in cesarean deliveries to be 10 per cent. These infants had breathed spontaneously and seemed in good condition for several hours; then followed respiratory distress, cyanosis, and death. At autopsy, the alveoli were expanded, but appeared to be covered with a hyaline membrane, which could have come from aspirated amniotic fluid, meconium, or blood.

At birth the infant's anatomic structures and physiologic processes must function immediately! The respiratory center, with the assistance of the carotid and aortic chemoreceptors, may be damaged during birth; or any of the above interferences with normal respiration may then continue the existing anoxia, or cause the extrauterine anoxia of mechanical obstruction of the air passages with mucus, vernix, amniotic fluid, or meconium. The condition of the asphyxiated newborn is never static! He recovers rapidly or proceeds with equal speed through the stages of mild, moderate or severe asphyxia to death (modification of Flagg's classification[1]).

SYMPTOMS

These depend on the primary cause—central or peripheral. Asphyxia exists when respiratory movements fail to occur within 30 seconds of delivery of the head.[1]

Mild.—Muscle tone is good, reflexes are present, resistance to passive movements of the extremities and jaw is retained, conjunctival and gag reflexes are present, heart tones are firm and are normal or nearly normal in rate, color is not too dusky.

Moderate.—Muscle tone is poor, reflexes, including the gag reflex, are sluggish or absent, heart tones are poor and tend to get weaker and slower, color is dusky and livid.

Severe.—The infant is limp, with a deathlike pallor and a purplish tinge; heart tones are weak and slow.

When the infant is anoxic and cyanotic, and the chest is flat to percussion and is retracting, the lungs are at fault. This may be confirmed by x-ray. When lung signs are minimal, intracranial hemorrhage or congenital heart lesion should be considered. The heart may or may not have a murmur, but increased pressure of the anterior fontanel and positive lumbar puncture findings (increased pressure or presence of blood) will confirm the existence of an intracranial lesion.

In asphyxia of central origin, the respirations are gasping, snapping, and periodic. In asphyxia due to the obstruction of the airways, respirations are regular and rapid and accompanied by a grunting stridor. During inspiration there is a retraction of the lower sternum and the costal margin, as well as the suprasternal notch and the intercostal spaces. These signs are not always definite enough to be diagnostic, but may serve as an aid in prognosis.

It is often difficult or impossible to differentiate mild asphyxia from the apnea of a narcosis due to the analgesic or anesthetic given the mother.

Fetal anoxia is diagnosed by the presence of yellow amniotic fluid and vernix and yellow stained skin and nails. Clifford[1] reports a fatality of 12 per cent and a high morbidity. Twenty per cent had icterus gravis or erythroblastosis fetalis with a mortality of 36 per cent. Parenthetically, it is interesting to note that Clifford reports that 60 per cent of these erythroblastotic infants did not have yellow stained vernix.

TREATMENT

The treatment of asphyxia neonatorum is both prophylactic and active. Not only is it a pediatric problem; it is also an obstetric problem. Serious depression of the respiratory system's central mechanism is by anoxia, which is the paramount cause of asphyxia.

The dangers of sedative, analgesic, and anesthetic drugs given in labor are becoming more apparent. Saddle block and caudal analgesia have largely eliminated the dangers of general anesthesia. Allowing the infant to regain as much as possible of the placental blood before the cord is clamped is another of the "newer" returns to older obstetric practice. Clifford[1] shows that the newborn has about 400 cc. of blood, that it can receive 50 cc. of placental blood in the first minute of life, and as much as 90 cc. in the first 3 minutes—almost 25 per cent of its total blood volume.

More and more attention is being given to the degenerative changes occurring in the placenta in postmature births, and to the resulting fetal anoxia in the late prenatal period.

The overweight infant, one weighing more than 8½ pounds, is as much a pediatric emergency as the premature baby, and the percentage of deaths in the first few days is almost as high. On careful review of the causes of many of these deaths of overweight

newborns, respiratory emergencies seem to be the predominant factor. Many seem to develop aspiration pneumonia after oral feedings are started.

The asphyxiated infant is in an emergency! The anoxic state gets progressively worse, and the respiratory center becomes less and less responsive to stimuli. The aim should be to revive the depressed respiratory center and to clear the air passages. This should be done with minimal handling, maintaining gentleness and warmth.

As soon as the head is delivered, the mouth, pharynx, and nasal passages are cleared by gentle suction with a catheter attached to a mucous trap or with a bulb syringe. If possible, this should be done before respirations are initiated, to prevent the aspiration of foreign matter. As soon as the body is delivered, the trachea is gently milked, while the infant is held in a warm towel, with the head in a dependent position to favor drainage of the 1 to 3 cc. of amniotic fluid which are always present. However, the amniotic fluid may be present in large quantity, or if the membranes have been ruptured for a long time, the possibility of infection is created, or the presence of blood or vernix will act as an obstructive mechanism in the passage of air or in the interchange of the respiratory gases. The infant is then placed in a heated crib and given 50 to 60 per cent oxygen for 12 to 24 hours.

If there is no resistance to the depression of the jaw, a laryngoscope should be inserted by experienced hands and suction of the trachea by direct visualization instituted, using a No. 10 or No. 12 French catheter and alternating with positive pressure oxygen.

If the laryngoscope causes active spasm of the glottis, tracheal intubation will not be necessary, as respirations can be anticipated. If the laryngoscope shows that the pharyngeal reflex is absent, tracheal aspiration under direct visualization for 1 inch is indicated. With the lower airway cleared and the infant in a state of apnea, the catheter is kept in place and pure oxygen is supplied by tracheal insufflation, using the Flagg apparatus and allowing no more than 12 inches of water pressure for no more than 5 seconds. The Flagg apparatus has a safety blow-off mechanism which can be set so as not to exceed 12 inches of water pressure, but the pressure should never be allowed to build up for more than 5 seconds in order to allow time for deflation or expiration. Another machine in use is the Kreiselman resuscitator which has an automatic blow-off mechanism (it does not have to be set) to get intermittent flow of oxygen. It is very important for the physician to know how to use these machines.

If breathing does not occur, Barcroft has suggested a constant stream of pure oxygen against the mouth and nose, not only to get a high oxygen intake when the first inspiration is taken, but to provide sensory stimuli to the skin and mucous membrane which may break the barrier of inhibition at the respiratory center, and to take advantage of the small amounts of oxygen which may be absorbed through the skin and mucous membrane.

Howard and Bauer[7] state unequivocally that "Oxygen is the most valuable single therapeutic agent available for a premature or full term, newborn infant, who is showing any evidence of respiratory difficulty, and it should be used early and generously . . . such an atmosphere increases breathing volume and has a steadying effect on the rhythm of respiration."

Respiratory stimulants are of limited value. Alphalobeline (0.2 to 0.4 cc. intravenously into the longitudinal sinus or into the external jugular vein, or directly into the heart) acts as a stimulant to the carotid and aortic chemoreceptors, but since they are first activated by anoxia and subsequently depressed by prolonged anoxia, it is of value only when given early, and the earlier the better. In moderate and severe asphyxia, oxygen lack at the respiratory center is aggravated by decreased blood flow; therefore, it seems reasonable that circulatory stimulants would increase the volume flow, and thus increase the oxygen available at the center, so epinephrine or caffeine or both could be tried.

The newborn infant has the advantage of being able to survive longer periods of asphyxia than older infants, perhaps owing to certain anaerobic pecularities of its metabolism in the early postnatal period. The newborn may survive periods of complete apnea of 10 to 15 minutes.[3]

The problem of artificial respiration is greater with uninflated lungs; they cannot be inflated by increased pressure in the trachea alone, and the amount of negative pressure necessary is greater than can be used with safety. Smith[8] reported that the lung can be expanded by 30 cm. of water of negative pressure, but emphysematous blebs started to form when the pressure reached 19. Increasing the pressure fills the bronchioles and alveolar ducts but not the alveoli, and there is the potential danger of rupturing these ducts and causing an interstitial emphysema. The only advantage is that a small amount of oxygen may be absorbed from the bronchial mucosa. This may even be enough to start respiration—the occasional effectiveness of mouth-to-mouth insufflation is an example. However, the dangers are great, and the Drinker respirator is going out of use. Litchfield[9] and Clifford[1] go so far as to say it is useless for babies who have not breathed.

Bloxsom[10] uses the oxygen-air lock. The infant is placed nude in a warm humidified chamber with 60 per cent oxygen, and the chamber is locked. The pressure is gradually increased to 3 pounds per square inch; the automatic trip mechanism allows the pressure to fall to 1 pound, and then it is again raised to 3 pounds. The cycle of increased and decreased pressure continues until the respirations are regular. The pressure is maintained at 2 pounds for several hours, then at 1 pound for several hours until all cyanosis of the hands and feet is gone. Following this the infant is put into an ordinary incubator with 60 per cent oxygen.

Bloxsom[10] claims the following advantages of his machine:

(1) It supplies oxygen under pressure, favoring greater absorption through the skin and upper respiratory tract. (2) By the expansion of gases, the fluids and secretions are forced from the air passages. (3) The alternating changes in pressure condition the infant for normal respiratory activity similar to the recurrent contractions and relaxations of the uterus during the first and second stages of labor. (4) During this time the infant is protected against the potential dangers inherent in the other methods which might be used by frantic doctors and nurses.

Once the air passages are cleared and the infant is kept in a warm, oxygenated crib, he can very well start to breathe spontaneously. Since asphyxia neonatorum may be due to a variety of causes, intrauterine, postnatal, or a combination, it is doubtful whether any

single mechanical device will solve all problems. Each case should be diagnosed carefully and individually, and treated accordingly. Overtreatment is as much to be feared as undertreatment.

Following Gellis's[11] method with infants delivered by cesarean section, the infant is kept in the heated, oxygenated crib, and after respirations have been initiated and are continuing at a regular rate, a No. 10 French catheter is passed slowly through the nose or mouth into the stomach. The negative pressure from the resuscitator should be constant. Oxygen is administered for 1 to 2 minutes during the procedure. When the stomach is reached, the abdomen is compressed and suction is attempted two or three times until no fluid is obtained. The infant is kept in continuous oxygen, the mucus in the nose and nasopharynx is aspirated when necessary, and the stomach is emptied every 3 hours for the next 12 to 24 hours. The infant is watched closely and handled infrequently and not given *anything* by mouth for at least 24 hours. When there is doubt as to the effectiveness of the respiratory excursions or the swallowing reflex, it is advisable to wait longer. Dehydration at this time is much preferred to drowning.

For hospitals which have a large obstetric service, a lifesaving team should be organized, consisting of the obstetric resident, pediatric resident, delivery room nurse, and nursery nurse, each to serve on the team for a varying length of time so that 3 of the 4 will be experienced should a new person come on the team. The team would be alerted in case of any abnormality of pregnancy such as cesarean section, placenta previa, breech or other abnormal position, prematurity, postmaturity, diabetes, eclampsia, pre-eclampsia, or an Rh negative factor in the mother. Members of the team should get special training in the use of the laryngoscope and respirators.

Synthetic detergents in aerosol sprays have been in use for respiratory conditions since 1948. Ravenel[2] reports that Hall had success in 20 out of 20 cases; Miller used it successfully in several hundred cases of varied respiratory emergencies. Ravenel was successful in 18 of 18 cases. Ravenel's patients consisted of newborns suffering from atelectasis or suggestive of fluid aspiration. He used a new aerosol, "Alevaire," which is made up of glycerin, 5 per cent, bicarbonate of soda, 2 per cent, and triton WR-1339, 0.5 per cent, dissolved in distilled water. Triton WR-1339 is an alkylaryl polyether alcohol, a wetting agent. It is synthetic, nonionizable, neutral, chemically stable to strong acids and alkalies, maximally water soluble, not hydrolytic, unaffected by standing in solution or by sterilization. It retains its detergency indefinitely in tissue, is compatible with antibiotics and buffer salts, and does not cause hemolysis of erythrocytes. It is nontoxic in strength up to 100 times that of other wetting agents. It has a lower surface tension than water, lowering the surface and interfacial tension, reducing viscosity, liquefying secretions, and tending to dissolve fatty secretions.

Ravenel[2] describes an apparatus, devised by Dr. J. B. Miller, for the production of aerosol mist. Miller's instrument costs about $2.70.

Oxygen is connected to a DeVilbiss No. 40 nebulizer to flow at a rate of 4 to 8 liters per minute. The infant is placed in the prone 15 degree Trendelenburg position. The solution bottle of Alevaire hangs above the nebulizer, with the flow into it being regulated by a screw clamp to a rate of 10 to 20 drops per minute. Any required drugs, such as an antibiotic, can be injected into the intake tubing with a syringe.

Alevaire has been used successfully in a number of respiratory conditions and should find a place in the armamentarium of the physician treating premature infants and those born by cesarean section, infants born after a long or "dry" labor, or any infant with any difficulty in initiating respirations or who might have aspirated milk.

Atelectasis is the failure of the pulmonary alveoli to inflate. With the initiation of respiration, the pulmonary alveoli normally fill with air. All the alveoli do not fill immediately; some inflate gradually over a period of many hours or even days. This is called physiologic atelectasis.

Obstruction of the air passages by the aspiration of foreign matter (mucus, blood, amniotic fluid) will cause a large or small area of atelectasis depending on the size of the bronchial tube blocked. A bronchus may be only partially occluded, allowing the air to enter but not to leave, creating areas of emphysema. Thus, upon physical examination, areas of emphysema, atelectasis, and normal air-bearing tissue may be found in the same chest.

If emphysema occurs, one of several things may happen: (1) the air is absorbed, leaving an area of secondary or resorption atelectasis; (2) partial blocking of a bronchus is spontaneously cleared, with normal expansion of the lung following; (3) overdistention causes the alveoli to rupture and allows air to escape into the pleural cavity, causing a pneumothorax or infiltration of the interstitial tissues of the lung which leads to an extensive interstitial emphysema; or (4) the escaping air may follow the tissue spaces surrounding the blood vessels and the bronchi to the mediastinum, causing a pneumomediastinum; from the mediastinum, the air may rupture into the general pleural cavity, causing a pneumothorax; or the air may even escape into the soft tissues of the neck.

The diagnosis of atelectasis is rarely definitive. The infant may have extensive atelectasis with no symptoms. Usually there are rapid, regular, short respiratory excursions with a low expiratory grunt. There is retraction of the lower sternum and the costal margin. Usually, there is intermittent cyanosis. The percussion note is likely to be hyper-resonant over the entire lung field, owing to the existence of emphysema, which is an almost constant feature. Auscultation may reveal patches of fine crepitant rales, but these are not diagnostic since they are also found in normal infants with physiologic atelectasis. Even x-ray examination may not show anything diagnostic. Air-trapping is indicated when the diaphragm is depressed and does not move freely with the respiratory excursion. Air-trapping in one or both lungs is confirmed by the deviation of the posterior mediastinum and the heart. A single anteroposterior view is not enough since x-ray evidence of pneumomediastinum and pneumothorax will appear only on a lateral view as an accumulation of air behind the sternum.

Zuelzer[5] says "Atelectasis . . . is the result, not the cause of failure to breathe. Although it may be the only anatomic irregularity it should not be considered as a diagnosis capable of explaining death. . . . Primary atelectasis can be recognized by the persistence of cuboidal epithelium in the lining of the air spaces and by the shape of the alveoli, which differs from the

cleftlike appearance of secondarily collapsed alveoli from which the air has been resorbed."

Pneumothorax occurs with no symptoms in 1 per cent of all newborns and is found only on routine x-ray. On physical examination no respiration, or decreased respiration with a fullness of the thorax on the affected side is observed; there are hyper-resonance on percussion, no breath sounds on auscultation, and displacement of the heart to the opposite side. The treatment is oxygen; frequent x-rays should be taken; spontaneous recovery is usually the end result.

Pneumomediastinum is quite rare. The symptoms are a severe dyspnea and air hunger, prominent sternum, short and rapid respirations, severe cyanosis, and heart sounds which are distant and of poor quality. The problem is both circulatory and respiratory because of the tamponade effect on the great vessels. On x-ray in the anteroposterior view there is a narrow area of translucence along the borders of the heart shadow. When the air is aspirated there is immediate and dramatic relief.

Hyaline membrane. Amniotic fluid is aspirated into the bronchial radicles and often into the alveolar ducts and even into the alveoli themselves during late fetal life. Usually it is absorbed, but a residue consisting of vernix caseosa, desquamated epidermal cells, and other detritus which can interfere with the free exchange of gases between the alveolar air spaces and the alveolar capillaries may remain on the epithelial lining.

In the bronchioles and alveolar ducts this residue obstructs the free flow of air and it may be responsible for the areas of atelectasis and emphysema. It has also been thought to be the protein remains of aspirated blood as well as a tissue exudate resulting from trauma to the epithelial linings. The use of aerosol detergents may be the answer to this most vexatious problem.

Agenesis of the lung is a rare anomaly. Oyamada, Gasul, and Holinger,[12] in a review of the literature dating from 1787, report 42 cases of aplasia of one lung in individuals ranging from stillborn infants to those 72 years of age. In the literature since 1860 they report 38 cases of congenital hypoplasia of one or both lungs with the individuals ranging from stillborn babies to 56 years of age. Since 1754, 4 cases of congenital absence of both lungs have been recorded. One infant lived for 20 minutes.

Congenital alveolar dysplasia is a condition where the lungs, on autopsy, are characterized by few alveoli and an overabundance of interstitial tissue. However, there is a question whether this is a separate pathologic entity, a developmental defect, or a secondary atelectasis.

Uninflatable lung tissue arises in the premature infant when many alveoli are still made up of solid masses of cells without a lumen.

Tracheoesophageal fistula is usually associated with esophageal atresia. The symptoms are vomiting, coughing, sputtering, cyanosis, and dyspnea at the first oral feeding; the child is left limp. X-rays should be made immediately. A blind esophageal pouch will be found at the level of the fourth dorsal vertebra, with a fistulous opening to the trachea. Barium is *never* to be used. A rubber catheter is inserted during fluoroscopy and, if an obstruction is present, ½ to 1 cc. of Lipiodal is used for contrast. The treatment is to (1) stop oral feedings, (2) perform oropharyngeal suction, (3) institute postural drainage, (4) administer parenteral fluids and medication, (5) administer penicillin, and (6) prepare for surgery.

The postoperative complications are laryngeal stridor and a temporary cardiac and respiratory arrest. The stridor usually follows feedings and may be due to excessive vagal stimulation. This can be treated with atropine sulfate, 1 drop of 1:2000, 10 minutes before feedings, increasing gradually to tolerance.

Pneumonia and *acute bronchiolitis* are common in the newborn; they are caused by the presence of aspirated foreign matter, or associated with atelectasis, emphysema, or hemorrhage into lung tissue. They may follow trauma to the pharynx, larynx, trachea, nose or mouth after vigorous attempts at resuscitation or they may be due to passive congestion, edema, or hemorrhage. The infant may be born with a virus infection, since it has been shown that viruses can be transmitted through the placenta. Other causes are aspirated food, especially in the premature infant, or infectious droplets from upper respiratory infections. They may also come via the blood stream from an infection elsewhere in the body.

The symptoms are dyspnea, respiratory grunt, rapid respirations, retractions, and cyanosis. There may or may not be an elevation of temperature; leukocytosis is also variable, since there is a physiologic leukocytosis for the first few days of life. The infant looks sick, nurses poorly, and loses weight. Percussion rarely produces sounds of consolidation; hyper-resonance is more common because of emphysema due to air-trapping. There are moist, crepitant rales and depressed breath sounds. On x-ray the commonest finding is the low, fixed position of the diaphragm due to air-trapping. Potter[13] says, "Clinical diagnosis in the newborn is often difficult . . . vascular markings in the lungs are normally unusually prominent in the infant for a few days after birth. . . . The gross appearance of the lungs on postmortem examination may be very misleading and microscopic examination is essential before a diagnosis can be established."

Prevention of pneumonia, especially in the newborn, is still the most important feature. This includes proper obstetric care before and during birth, skillful and gentle aspiration, warmth, protection from airborne and contact infections, and careful feeding technics. Every infant born after a difficult labor, every infant born after the membranes have been ruptured for a long time, every one who starts breathing with difficulty should have prophylactic antibiotic therapy.

Treatment should consist of continuous oxygen as long as there is dyspnea or cyanosis, maintenance of fluid and electrolyte balance, adequate dosage of the proper antibiotic and frequent and gentle osteopathic manipulation to the cervical and dorsal areas with the lymphatic pump. Blood transfusions should be given in moderately severe cases. The prognosis is grave, especially in premature infants. Multiple lung abscesses, empyema, and generalized sepsis may readily develop.

Other conditions causing respiratory embarrassment in newborns which must be given consideration in differential diagnosis include:

Paralysis of the diaphragm in association with brachial plexus injury, hernia of the diaphragm, lung cysts, enlarged thyroid or thymus, micrognathia, ranula, congenital enlarged heart, diphtheria, laryngotracheo-

bronchitis, angioneurotic edema, pulmonary edema, asthma, and respiratory paralysis due to central nervous system involvement, including poliomyelitis.

1648 S. 4th St.

REFERENCES

1. Clifford, S. H.: Fetal anoxia at birth and cyanosis of newborn. Am. J. Dis. Child. 76:666-678, Dec. 1948.
2. Ravenel, S. F.: New technique of humidification in pediatrics. J. Am. M. A. 151:707-711, Feb. 28, 1953.
3. DeSanctis, A. G., and Varga, C.: Handbook of pediatric medical emergencies. C. V. Mosby Co., St. Louis, 1951.
4. Eastman, N. J.: Prevention of fetal anoxia. Am. J. Dis. Child. 76:661-665, Dec. 1948.
5. Zuelzer, W. W.: Pathologic conditions resulting in fetal anoxia and cyanosis of newborn. Am. J. Dis. Child. 76:679-688, Dec. 1948.
6. Russ, J. D., and Strong, R. A.: Asphyxia of newborn infant. Am. J. Obst. & Gynec. 51:643-651, May 1946.
7. Howard, P. J., and Bauer, A. R.: Irregularities of breathing in newborn period. Am. J. Dis. Child. 77:592-609, May 1949.
8. Smith, C. A.: Effects of birth processes and obstetric procedures upon the newborn infant, in Advances in pediatrics, Vol. III. Interscience Publishers, New York, 1948.
9. Litchfield, H. R.: Asphyxia neonatorum; evaluation—etiology and treatment. J. Pediat. 26:279-286, March 1945.
10. Bloxsom, A.: Resuscitation of newborn infant; use of positive pressure oxygen-air lock. J. Pediat. 37:311-319, Sept. 1950.
11. Gellis, S. S., White, P., and Pfeffer, W.: Gastric suction—proposed additional technic for prevention of asphyxia in infants delivered by cesarean section. New England J. Med. 240:533-537, April 7, 1949.
12. Oyamada, A., Gasul, B. M., and Holinger, P. H.: Agenesis of lung. Am. J. Dis. Child. 85:182-201, Feb. 1953.
13. Potter, E. L.: Pathology of the fetus and the newborn. Year Book Publishers, Chicago, 1952.

ADDITIONAL REFERENCES

Clinical Conference at Mt. Sinai Hospital, N. Y.: Case 1. Diaphragmatic paralysis associated with Erb's palsy. J. Pediat. 34:95-98, Jan. 1949.

Hall, G. C., Jr.: Use of wetting agents in treatment of respiratory infections of infants. Am. J. Dis. Child. 85:1-3, Jan. 1952.

Landau, D. B., *et al.*: Death of cesarean infants; theory as to its cause and method of prevention. J. Pediat. 36:421-426, April 1950.

Miller, H. C., and Hamilton, T. R.: Pathogenesis of vernix membrane; relation to aspiration pneumonia in stillborn and newborn infants. Pediatrics 3:735-748, June 1949.

Miller, H. C., and Jennison, M. H.: Study of pulmonary hyaline-like material in 4,117 consecutive births; incidence, pathogenesis and diagnosis. Pediatrics 5:7-19, Jan. 1950.

Miller, J. B., and Boyer, E. H.: A non-toxic detergent for aerosol use in dissolving viscid bronchopulmonary secretions. J. Pediat. 40: 767-771, June 1952.

Parmelee, A. H.: Management of the newborn. Year Book Publishers, Chicago, 1952.

Ripp, J. A.: Fatal case of pneumomediastinum, subcutaneous emphysema, and pneumothorax lenta in newborn infant. J. Pediat. 37:917-921, Dec. 1950.

Smith, C. A.: Physiologic background of fetal anoxia at birth and cyanosis in newborn. Am. J. Dis. Child. 79:1-9, Jan. 1950.

Musculoskeletal Diseases in Children*

With Special Reference to Therapy of Rheumatic Fever

EVERETT C. BORTON, D.O.
Associate Professor of Practice
Chicago College of Osteopathy
Chicago

Probably the most discussed phase of musculoskeletal disease in the child is acute rheumatic fever. This paper will deal with some of the allied conditions and discuss therapy of the acute attack.

One of the most common symptoms which causes parents to bring a child in for consultation is the controversial "muscle cramps," or myositis due to a metabolic disturbance. There has been much discussion as to whether or not such things as "growing pains" actually exist. Recently they have been recognized as a definite syndrome due to chronic muscle strain and fatigue.[1] The muscle cramps are probably initiated by overexertion of the muscle, with tissue anoxia, and are thought to be associated with the accumulation of nitrogenous wastes. This is an old osteopathic principle. Frequently on examining these youngsters I have found early short-leg problems and have been able to obtain relief in most cases by adequate lift therapy and osteopathic manipulative therapy of the lumbar region.

I wish to emphasize at this point the importance of recognizing this short-leg problem. Even at the age of 10 or under a difference of leg-lengths—due either to congenital abnormality or injury to the growth centers previous to this age—may reveal itself by muscle cramps. If these patients continue without proper treatment, as teen-agers they are often found having frequent headaches, undoubtedly due to scoliotic posture strain. Then, if they are not properly treated, they continue to have frequent headaches, and near the age of 40 they become subject to recurrent lumbar myositis, sacroiliac subluxation, et cetera, due to a breakdown of the structural integrity of the body.

It should be emphasized, however, that any lift therapy started on a child must be carefully followed by standing pelvic x-ray throughout his entire growth period. Trauma and growth changes may alter the need for lift therapy. In my practice I insist on recheck standing pelvic x-ray at least yearly.

Occasionally mechanical foot defects may be the cause of the muscle cramps. Mechanical correction of the muscle strain is the treatment of this syndrome of muscle cramps or "growing pains."

In recent years, epidemic myalgia or pleurodynia has been described as a disease entity produced by one of the Coxsackie group of viruses,[2] usually occurring in epidemic form and characterized by fever and pain around the lower chest and upper abdomen. The pain, generally of a paroxysmal, knife-like character, with a radicular pattern, is frequently associated with weakness, fatigue, frontal headache, and dizziness. Deep breathing and movements of the body aggravate the pain. The condition may be unilateral. Local short-wave diathermy, corrections of osteopathic lesions found in the thoracic region, and osteopathic manipulation of the thorax in the "lymphatic pump" fashion give almost immediate relief in most cases.

The many bursal of the joints and tendon sheaths over the skeletal system of the body are lined with synovial membrane. Trauma or systemic infection may cause inflammation of this membrane. This may or may not cause an accumulation of fluid, but always causes a localized pain. Suppurative bursitis, which may occur in infection by any of the pyogenic

*Presented at the Refresher Course of Mid-Continent Regional Group, American College of Osteopathic Pediatricians, Des Moines, Iowa, October, 1952.

organisms, should be drained. Tuberculous bursitis most commonly involves the trochanteric bursa. The treatment is that of tuberculous systemic infection. Calcaneal bursitis, one of the most frequent types occurring in childhood, causes pain about the heel. In this condition attention must be given to the structural integrity of the articulations of the foot and leg bones. In most instances the real difficulty is Achilles tendinitis or a calcaneal epiphysitis due to local irritation or injury. In general, management consists of examination and articulation to restore normal structural integrity, rest, and removal of source of irritation (such as ill-fitting shoes, stockings, braces, and so forth).

A rather rare form of osteochronditis involving an accessory center of ossification at the lower pole of the patella has recently been reported by Wolf.[3] Accessory centers may occur singly or in multiple form, and they may remain without symptoms or cause a disturbance in the ossification of the patella between the ages of 10 and 14. Twenty-five or thirty cases have been reported and to them has been given the name of Larsen-Johansson disease. It may appear with Osgood-Schlatter and Perthes' disease. The cause is unknown, but may involve trauma, endocrine disturbances, congenital abnormalities, infection, rickets, or vascular disturbances. In the acute form, inflammation occurs in the second area epiphysis, avascular necrosis results from interference with blood supply, and healing usually takes place with regeneration of the cartilage and bone with fusion of the accessory center to the patella. The patient is usually a healthy boy or girl, aged 10 to 14, with a slight limp. Over the lower pole of the patella are localized tenderness, warmth, and thickening of the soft tissues. There may be difficulty in extending the knee or kneeling. X-ray shows change in the contour of the inferior pole of the patella. The area may be blurred, irregular, and exhibit islands of condensation in a matrix of rarefied bone. In ordinary cases, immobilization of the knee in extension by taping or splint is usually sufficient. Testosterone—25 to 100 mg. daily, intramuscularly or orally—is reported to be helpful in severe cases. Recovery is indicated by disappearance of symptoms.

Arthritis in children may be subdivided into pyogenic arthritis, chronic rheumatoid arthritis, and tuberculosis of the joints. Pyogenic arthritis may occur with or without suppuration. Acute suppurative pyogenic arthritis is usually secondary to a bone infection adjacent to the joint. The patient has symptoms of an acute febrile illness, with fever, toxic manifestations, leukocytosis, and extreme pain on movement of the involved joint. The treatment includes supportive measures, depending upon the severity of the illness; sulfonamide or antibiotic therapy, depending upon the causative organism; and rest of the limb by means of traction to hold the joint surfaces apart and prevent dislocation. Drainage or aspiration may be necessary in certain intensely swollen joints containing pyogenic fluid.

Rheumatoid arthritis is most often a multiple joint disease in children. It frequently accompanies or follows an attack of acute rheumatic fever. In such cases the Streptococcus is usually the etiologic agent. Chronic rheumatoid arthritis involves erosion of the articular cartilage and proliferation of the synovial membrane, and frequently results in ankylosis of a joint. The treatment includes building the highest possible degree of physical resistance with rest, quiet, good food, fresh air, and vitamin therapy. Salicylates are indicated not only to relieve pain but as has recently been demonstrated, to aid in the recovery of the rheumatic patient.[4] Antibiotic and chemotherapeutic agents have proved to be of little value. Local massage and passive exercise (especially after heat has been applied to the joint) are of value. The osteopathic physician is able to apply manipulative therapy much more specifically than the physician without training in manipulation.

Tuberculosis of the bones and joints in children is quite uncommon, probably due to the fact that it is usually a bovine type, and with the elimination of tuberculous cattle and widespread pasteurization of milk this disease has been much reduced in incidence. Also, isolation of tuberculous adults has contributed to the reduction. About 50 per cent of the cases of bone and joint tuberculosis occur in the spine. This is probably due to the fact that spinal joints are all weight bearing and are subjected to trauma almost continuously.[1]

Clinically, joint tuberculosis may be suspected where there is a history of a limp with minimal pain, swelling without presence of effusion, and periarticular tissues which are thick and doughy. The typical tuberculous joint does not demonstrate the cardinal signs of inflammation. The treatment is that of the tuberculous infection. Isonicotinic acid appears to be of great value in these cases. I have seen the presentation of four cases of bone and joint tuberculosis, at Sarah Morris Hospital for Children in Chicago, which not only demonstrated rapid subjective recovery, but regression of x-ray evidence of infection replaced by normal bone pattern.

Spondylarthritis in children is reported by Saenger[5] as a low-grade inflammatory process involving both the intervertebral disk and adjacent vertebral bodies with clinical evidence of infection in some cases. In four cases no etiologic agent could be demonstrated. Trauma and low-grade infection appear to be causative factors. X-ray studies reveal a narrowing of the intervertebral space and mild destruction of the adjacent portions of the involved vertebrae, slowly progressive for 1 to 2 months, then showing evidence of healing for 2 to 8 months with relatively complete restoration to normal appearance.

ACUTE RHEUMATIC FEVER

The management of rheumatic fever must be discussed from two aspects: first, the prevention of recurrences in the child who has had an acute attack, and, second, the therapy of the acute attack. The surest means of preventing a rheumatic recurrence is the prevention of hemolytic streptococcic respiratory infections. Recurrences may be expected in one-third to two-thirds of rheumatic subjects contracting these infections. According to the report of the Rheumatic Fever Research Institute, Northwestern University Medical School, it has been found that the chief offending organism is the organism of Lancefield's Group A, causing beta hemolysis.[4]

The sulfonamides may be used as the chemoprophylactic agent. The sulfonamide of choice appears to be sulfadiazine because of its relatively low toxicity. One gram a day is advised for older children, and 0.5 gram a day for small children, as one dose in the morning or in two equally divided doses morning and night. This should be administered the year round,

rather than periodically and necessitates frequent rechecks of the blood for hemoglobin, total white counts, and sulfonamide level in the serum and of the urine for albumin and red blood cells. Continuation of therapy for 5 years or until puberty has been advised. Sulfonamide therapy is contraindicated at the time of an acute attack. Oral penicillin is virtually nontoxic, but, continuous penicillin prophylaxis is not practical since the cost is still prohibitive for the majority of patients. A dose of 50,000 to 100,000 units twice a day is advised ½ hour before breakfast and supper, after a fast of at least 4 hours to prevent inactivation by food and the gastric secretion.[4]

Salicylates have been advised by some in prophylaxis begun at the onset of pharyngitis and maintained for 4 weeks to suppress the rheumatic activity at an early level.[4] The routine I have been following is to have any type of pharyngitis whatsoever reported early and to give a daily dose of at least 300,000 units of procaine penicillin intramuscularly until symptoms have subsided, followed by 100,000 to 200,000 units orally five times a day for several days. This seems to be the most practical and least toxic method, as well as the least costly. Cases in which recurrences have previously occurred are advised to follow a more continuous prophylactic regimen.

In the therapy of the acute attack, rest and a well-balanced diet with emphasis on protein are essential. Field studies conducted in Chicago revealed a 2.8 per cent incidence of rheumatic fever among children attending school in one of the poorest sections of the city, and only a 0.6 per cent in a group of private school children from families of the upper middle class. The former had striking deficiencies in protein, milk, eggs, and vitamins A and C.[4]

Attention must be given to the inflamed joints, usually applications of methyl salicylate locally. Osteopathic manipulative therapy should be administered regularly—in the more severe cases three times a week for at least the first week or two, and with gradually decreasing frequency according to the patient's progress. Articulation of the cervical and upper thoracic areas seems to be most important; but complete structural integrity is necessary for the earliest possible recovery.

Adrenocortical hormone therapy appears to be proving of great value in hastening relief of the acute attack of rheumatic fever—either ACTH or cortisone is advised. At present it seems only a matter of convenience in administration that I am using cortisone in most cases. To be effective ACTH must be given parenterally, either intramuscularly or intravenously. By the intravenous drip method only one-fifth of the intramuscular dose is necessary.[6] Optimum dosage of these agents has not been determined. The intensity of the disease should be the factor determining the requirement, rather than age or weight of patient. In rheumatic carditis the sleeping pulse is a good criterion of adequate dosage, a rate of 70 to 80 a minute being desirable. This usually is attained by 40 to 60 mg. of ACTH daily, administered preferably in four equal doses.[4]

The day's dose of cortisone is usually double that of ACTH and may be given in a single intramuscular injection or orally. In contrast to the finding with most drugs, the oral route is more rapid in action than the intramuscular route. Administration of cortisone may have a more permanent effect on the adrenal gland, decreasing its normal function. For this reason ACTH therapy is preferable, but since the majority of rheumatic fever patients come from low-income family groups unable to afford hospitalization and parenteral ACTH therapy, oral cortisone has been used in the cases under my care. Fortunately prolonged administration is not usually required. From 100 to 200 mg. of cortisone are administered daily, divided into four equal doses. This is discontinued when the sedimentation rate returns to normal. Low sodium diet should be maintained and edema due to sodium retention watched for. Potassium depletion must be borne in mind. These and the other side effects of ACTH and cortisone therapy have not been seen in the cases I have observed, probably due to the short duration of therapy necessary. The temperature usually remains normal after 4 to 7 days, and the sedimentation rate usually remains normal after 2 to 3 weeks. If no evidence of carditis is detected by examination including electrocardiography, gradual ambulation is permitted, and the usual measures taken to prevent recurrences. The patient must be under regular observation for months or years. Status epilepticus reported in the literature coincident with the use of ACTH[7] has not been encountered.

Salicylate therapy has been shown by several investigators not only to relieve pain, reduce fever and tachycardia, but suppress the inflammatory reaction as well.[4,8] One and one-half grains per pound of body weight is generally an effective dose. Serum salicylate determinations should be made periodically if dosage is continued, so that a level of 35 to 45 mg. per cent is maintained. Reports of alarming, even fatal, salicylism following massive therapy are not lacking, so toxic manifestations must be watched for and proper measures taken to correct them, especially if hyperventilation and vomiting begin. Usually discontinuation of the drug and forcing fluids for a time are sufficient, but administration of sodium bicarbonate will cause a fall in plasma salicylate level by increasing urinary excretion of salicylate. It has been suggested that vitamin K always be given with any massive dose of salicylate since 1 mg. of synthetic vitamin K will counteract the prothrombin reducing effect of 1 gram of acetylsalicylic acid.

CONCLUSION

An attempt has been made to point out the common musculoskeletal conditions encountered in the pediatric patient and to emphasize the osteopathic approach to therapy. In the care of the acute rheumatic fever patient, ACTH and cortisone have been found to be valuable adjuncts in relieving the acute symptoms quickly. Osteopathic manipulative therapy to maintain normal structural integrity may be relied upon as one of the best modalities for the care of the rheumatic child. Proper diet, vitamin intake, and general good living conditions would go far to decrease the incidence of acute rheumatic fever and allied rheumatic conditions.

758 E. 79th St.

REFERENCES

1. Grulee, C. G., and Eley, R. C.: The child in health and disease. Williams & Wilkins Co., Baltimore, 1948.

2. Nichamin, S. J.: Pleurodynia in children; clinical observations in 54 cases. J. Am. M. A. 148:1002-1004, March 22, 1952.

3. Wolf, J.: Larsen-Johansson disease of patella: 7 new case records; its relationship to other forms of osteochondritis; use of male sex hormones as new form of treatment. Brit. J. Radiol. 23:335-347, June 1950.
4. Moore, L. V.: Some aspects of the care of the rheumatic subject. M. Clin. North America 36:217-228, Jan. 1952.
5. Saenger, E. L.: Spondylarthritis in children. Am. J. Roentgenol. 64:20-31, July 1950.
6. Irons, E. N.: Recent studies on ACTH and cortisone. M. Clin. North America Jan. 1952.
7. Dorfman, A., *et al.*: Status epilepticus coincident with use of pituitary adrenocorticotropic hormone; report of three cases. J. Am. M. A. 146:25-27, May 5, 1951.
8. Rosenblum, H.: Rheumatic fever, in Current therapy, edited by H. F. Conn. W. B. Saunders Co., Philadelphia, 1952, pp. 193-196.

Problems in the Use of Antibiotics in Pediatrics

WILLIAM S. SPAETH, D.O., F.A.C.O.P.
Professor of Pediatrics
Philadelphia College of Osteopathy
Philadelphia

Anyone who has used antibiotics over a long enough period, in various diseases, and for a sufficient number of patients has been confronted with many problems. They are:

1. When antibiotics should be used
2. Principles of use and selection
3. Dosage
4. Complications or reactions.

WHEN ANTIBIOTICS SHOULD BE USED

Many infections were treated successfully by osteopathic manipulation before antibiotics were even known. Therefore, there is no reason for prescribing antibiotics for the pediatric patient the moment he sneezes, coughs, or runs a temperature under 102 F. There is considerable thought being given to the promiscuous use of antibiotics today. The too early use of antibiotics in children interferes with their development of natural immunity to various infections.

I am well aware of the pressure put on the physician by the parents' insistence on the immediate use of some form of antibiotics. As soon as he has examined the child they ask if he is going to prescribe penicillin.

I withhold antibiotic treatment in the early stages of infection for several reasons:

1. So that the child can develop phagocytic reaction (This can be activated by osteopathic treatment.)
2. So that a culture of the infecting organisms can be taken for a sensitivity test in more severe infections.

Then penicillin may be given until the specific organisms have been tested for resistance to various antibiotics.

PRINCIPLES OF USE AND SELECTION

Principles.—In the application of the antimicrobial agents, these principles should be considered:

1. Sensitivity of the infecting organisms
2. Accessibility of the organism
3. Concentration of the antibiotic at the site of infection.

Unfortunately many practitioners let themselves be pressed into using antibiotics without consideration for the above principles. There is pressure on the physician from the public and from the medical profession itself to use these agents in even the most mild or self-limited infections.

There is already a decline in the effectiveness of the sulfanilamides because of the rapid increase of resistant strains of previously sensitive organisms and an increase in patients who have become sensitive to them. The same holds true of the "broad spectrum" antibiotics. Consideration must be given as to how these agents can be used most effectively and not how generally.

The first principle of antibiotic therapy is to use the agent to which the organism is sensitive. There is little logic in the use of penicillin in virus infections or in Bacillus coli infections when penicillin has no effect on them.

Accessibility of the infecting organism is important. The antibiotic agent must contact the infecting organism. In intestinal infection, poorly absorbed antibiotics such as oral streptomycin have been recommended and, in some instances, have proved successful. Infection of the intestines is not usually localized in superficial layers of the intestinal mucous membranes, and systemic therapy must be used alone or in conjunction with oral therapy.

The concentration of the antibiotic agent at the site of infection is interfered with by local conditions and presence of a substance that prevents the antibiotic's penetration or contact with the organism. Most of the common infections are "accessible" to antibiotics. The recommended dosage will produce an adequate level of the antibiotic at the site of infection.

Accessible infections are tonsillitis, acute pneumonia, catarrhal otitis media, cellulitis, and those of the intestine and kidneys. These infections frequently cause abscess formation, in which case the encased organism is separated from the antibiotic in the blood serum and tissue fluid by pus, necrotic matter, and fibrous tissue. Other methods of placing the antibiotic at the site of infection must then be employed.

There are also some avascular areas such as bone and cerebrospinal fluid that require high dosage in order for the antibiotic to penetrate into the site of infection in sufficient amount to be bactericidal. Such diseases as osteomyelitis, most meningitides, bronchiolectasis, and subacute bacterial endocarditis are classed as "inaccessible." The therapeutic approach in the "inaccessible" type is twofold—adequate dosage and proper route of administration. Pneumococcic pneumonia will respond to moderate dosages of antibiotics, since in the small child, it is a superficial catarrhal infection of the mucous membrane. As soon as it becomes complicated with abscess formation, higher dosages are needed and bronchoscopic aspiration of the abscesses must be made.

Selecting the Antibiotic.—The general practitioner does not always have at his command the laboratory facilities to identify the infecting organism, and the cost and side reaction of antibiotics often influence his choice. He therefore resorts to the clinical trial-and-

error method. When the patient fails to respond, he is hospitalized where culture of the infecting organism and antibiotic sensitivity test can be made.

As a guide to dosage in the treatment of refractory infection, the therapeutic importance of knowing whether an organism is very susceptible, moderately or slightly susceptible, or resistant to a specific antibiotic cannot be overstressed. The disk test of susceptibility is accurate enough for clinical purposes. Also the results of the disk test have proved satisfactory in clinical experience.

Selection also depends on whether (1) the infection is superficial or deep, and (2) the infected area is difficult to penetrate.

Failure of Infection to Respond to Antibiotics.—The infection may not respond to an antibiotic because of:

1. Failure to isolate the infecting organism

2. Secondary invasion in areas easily accessible to infection, as indicated by relapses after apparent improvement and particularly with a change in symptoms or physical signs

3. Unchecked growth of resistant organisms caused by elimination of the susceptible organism which has been antagonistic to it

4. Inadequate dosages which cause organisms to become resistant

5. Mechanical or anatomic barriers which prevent sufficient concentration or penetration into the infected area, as in walled-off abscesses and subacute bacterial endocarditis

6. The fact that staphylococcic infections in the last 8 years have gradually become resistive with the very wide use of antibiotics (Synergistic combinations of antibiotics may help.)

7. Vomiting of the antibiotic

8. Difficulty in getting the child to take oral medication.

Some physicians may be inclined to administer penicillin, even to patients found to be infected with organisms resistant in vitro to penicillin. This practice usually stems from experience with a case where the antibiotic was found clinically effective in spite of laboratory findings indicating that it would not be. It should always be borne in mind that the good results probably were obtained when large doses of penicillin were administered to a patient whose high phagocytic power may have disposed of a small number of resistant or drug-inhibited bacteria. In vitro tests do not take immunologic factors into account, but all patients cannot be counted on to possess high phagocytic powers or limited numbers of resistant bacteria.

Combinations of Antibiotics.—The value of combining antibiotics is not clear. Four reactions have been observed in vitro:

1. Antagonism (This has not been proved in human infection. The manner in which Chloromycetin interferes with the bactericidal effect of penicillin is an example.)

2. Additive action (The addition of another antibiotic known to be active in vitro often results in good clinical response.)

3. Synergism (This reaction is based on the potentiation of drugs by one another. The addition of streptomycin in small amounts results in a marked increase in the bactericidal action of penicillin and sterilization of the culture.)

4. No reaction.

DOSAGE

Penicillin still remains the antibiotic of choice in most common infections as it is effective against gram-positive cocci and bacilli and gram-negative cocci. The flexibility of administration, comparatively low cost, and bactericidal action in adequate dosages add to its advantages.

The dosage depends on the type of penicillin used, the sensitivity of the infecting organism, and the accessibility to the infection.

Research studies of Eagle, cited by Hunt,[1] showed that the maximum bactericidal effect of penicillin is present when blood serum levels are between 0.5 and 0.1 units per cc.; when the level is between 0.1 and 0.03 units per cc., penicillin is only bacteriostatic, and under 0.03 it has little or no effect.

Further studies[2] revealed that the amount of penicillin given intramuscularly was directly related to both the effectiveness and length of the period of bactericidal action. After large dosages, penicillin was found 6 to 10 hours longer in the tissue fluid than in the circulation; after small doses only 2 to 6 hours longer.

Penicillin Preparations.—Intramuscular Crystalline Penicillin: This preparation is usually supplied in the potassium salt or the sodium salt. It is supplied in various strengths from 100,000 to 5 million units per cc. Effective bactericidal levels are reached in ½ to 1 hour following injection and decrease rapidly thereafter. Various dosages are recommended. In accessible infections blood serum levels of 0.1 to 0.5 are adequate and can be obtained on 500 units to 1,000 units per pound of body weight, but to maintain this level the dosage must be repeated every 3 hours. Larger dosages have the advantage of fewer and longer intervals between injections. This reduces the psychic trauma to the child.

Procaine Penicillin: Given intramuscularly this type of penicillin is the one of choice today. It is recommended in dosages of 6,000 units per pound of body weight. This dosage will produce peak serum levels in 30 minutes of 2 units per cc. and at the end of 24 hours the serum level is 0.1 unit per cc., thus providing an injection that is adequate for 24 hours.

Oral Crystalline Penicillin G: Supplied in tablet and liquid form at various strengths of 50,000 to 500,000 units, it is usually in a potassium salt but at times in a sodium salt. Added are various buffering agents to increase absorption, and renal blocking agents to prevent too rapid excretion. It is slow to reach effective levels. The recommended dosage varies from 250,000 to 500,000 units two or three times a day. The preventive dosage ranges from 100,000 to 200,000 daily or twice daily. Another recommended dosage for oral penicillin in children is 3,000 to 6,000 units per pound of body weight every 3 hours to maintain optimal bactericidal effectiveness.

Long-Acting Penicillin: Other preparations of procaine penicillin in oil and aluminum monostearate maintain detectable blood serum levels of penicillin up to 96 hours. The circulation level at the end of 24 hours tends to drop between 0.1 and 0.03 units per cc. and provides only bacteriostatic action. This would be adequate in prophylactic therapy and if injection

was repeated in 72 hours. I have found it effective in common infections. These preparations, because of frequency of reaction, are not recommended in pediatric practice.

A recent development is a long-acting penicillin G which comes in oral and aqueous suspensions—dibenzylethylenediamine dipenicillin G. Tablets of 200,000 units give blood levels of 0.1 in 30 minutes and 0.9 in 3½ hours, with a gradual decline to 0.2 in 10 hours, which is adequate in most common infections. The sick child needs rest and uninterrupted sleep as part of the treatment for recovery. This long-acting penicillin is recommended every 12 hours. It is supplied under the trade names of Bicillin and Permapen. An injection of procaine penicillin, 600,000 units, is recommended as the initial dose, followed by a Bicillin L-A tablet every 12 hours in severe infections without bacteremia. The dose is doubled if clinical response is slow. Bacteremia should be treated by parenteral penicillin entirely, in dosage of 800,000 to 1,000,000 units daily.

Aureomycin, Chloromycetin, and Terramycin.—The three broad spectrum antibiotics, aureomycin, Chloromycetin (chloramphenicol), and terramycin have a bacteriostatic effect on the gram-positive bacteria and gram-negative cocci and bacilli and rickettsiae. They are readily absorbed from the intestinal tract. Chloramphenicol in capsule form is more completely absorbed than the Chloromycetin palmitate liquid (pediatric) preparation. The recommended dose is 10 mg. per pound per dose in moderate infection and 10 to 20 mg. in more severe infections. Chloramphenicol penetrates into the spinal fluid more completely than aureomycin or terramycin. It is therefore more effective in some types of meningitis. In the treatment of typhoid fever it is the one of choice.

Aureomycin and terramycin are interchangeable in their indications. They are slowly absorbed from the intestines. Effective therapeutic levels are maintained for 8 hours with the peak level being reached as late as 4 hours. The recommended dose is based on weight and severity of infection. The average oral dose recommended for aureomycin is 12.5 mg. to 20 mg. per kilogram of body weight for adults and children. Intestinal absorption cannot be increased by doubling the dosage. Aureomycin in intravenous form is for emergency use only.

The average oral dose for terramycin is 5 mg. per pound of body weight per dose. Larger dosages of 10 or 15 mg. will increase the serum level, but such levels are rarely needed.

Streptomycin.—The use of streptomycin has been curtailed because of a tendency to produce eighth nerve damage. However, streptomycin remains the antibiotic most effective against the gram-negative baccilli. Also, owing to its synergistic action with penicillin, it has proved very effective in certain types of subacute bacterial endocarditis. In a moribund infant or child in which the infecting organism is not known and time is precious, it is my first choice. The recommended dosage is 5 mg. per pound of body weight per dose every 6 hours. Streptomycin should not be administered for more than 1 week in acute infections because of its toxic effect and because bacterial desensitivity is likely to develop by this time. The length of time to use the antibiotic is important. When the invading organism has been proved sensitive to the antibiotic of choice, it should be continued in use until the infection is overcome. Chronic disease of the lung such as chronic bronchitis has resulted from (1) too short use of the antibiotic, (2) the lack of follow-up with osteopathic manipulative treatment, (3) the lack of proof that the infection has been eliminated.

COMPLICATIONS OR REACTIONS

The toxic side effects following the use of antibiotics are becoming more familiar with their continued use.

Woods, Manning and Patterson[3] encountered a number of cases of clinical moniliasis following the use of antibiotics. The first group, self-medicated, presented the clinical picture of perlèche, hairy tongue, and thrush following the use of local sprays, troches, and the like of penicillin or aureomycin. In a smaller group they encountered patients with persistent diarrhea following use of penicillin, aureomycin, or Chloromycetin. In these cases Candida albicans was found growing abundantly in the stools.

It is known that Candida albicans and other nonpathogenic strains of Candida are commonly found in the mouth, respiratory and intestinal tracts, genitalia, and skin of normal persons. It is also known that Candida albicans is pathogenic under certain conditions.

Harris[4] suggests from his experience that with the destruction of the bacterial flora by the use of antibiotics (aureomycin, Chloromycetin) the normally nonpathogenic Candida albicans may overgrow and gather virulence and invade tissues that have weakened resistance because of vitamin B or riboflavin deficiency.

Reaction to intramuscular, intravenous, and subcutaneous administration of penicillin is attended by a wide variety of undesirable phenomena. They are less common in children than adults.

1. Severe local reaction at site of injection is at times alarming, producing edema, redness, and pruritus of the entire limb within 48 hours.

2. Toxic reaction of the skin such as morbilliform or scarlatiniform rashes, universal exfoliative dermatitis, and erythema nodosum have developed in from 2 to 3 days.

3. The most common reaction to penicillin is urticaria. About one in ten patients develops hives after receiving penicillin. The urticaria appears 7 to 10 days after the administration of the drug; in one case it was 20 days. At times the urticarial eruption is accompanied by malaise, fever, and painful joints. Other patients receiving penicillin therapy will occasionally develop an acute dermatitis between the toes and in the genitocrural area.

A wide variety of reactions to streptomycin has been recorded by different observers. Thrombopenic purpura has occurred in a tuberculous patient and other cases of blood dsycrasia have been noted. Contact dermatitis has been noted in individuals working with streptomycin. Sensitivities to streptomycin ointment are frequently seen. Four cases of aplastic anemia with two fatalities from the use of Chloromycetin in common infections have been reported. Therefore, before administering antibiotics, the physician should always investigate the possibility of his patient's sensitivity to any of the antibiotics.

2804 Hillcrest Road

REFERENCES

1. Hunt, A. D., Jr.: Antibiotics in pediatric practice. M. Clin. North America 36:1607-1618, Nov. 1952.
2. Weinstein, L., Daikos, G. K., and Perrin, T. S.: Studies on relationship of tissue fluid and blood levels of penicillin. J. Lab. & Clin. Med. 38:712-718, Nov. 1951.
3. Woods, J. W., Manning, I. H., Jr., and Patterson, C. N.: Monilial infections complicating therapeutic use of antibiotics. J. Am. M. A. 145:207-211, Jan. 27, 1951.
4. Harris, H. J.: Aureomycin and chloramphenicol in brucellosis. J. Am. M. A. 142:161-165, Jan. 21, 1950.

ADDITIONAL REFERENCES

Cooper, D.A.: Present status. Delaware M. J. 23:105-112, May 1951.

Editor's Column: Antibiotics—whither. J. Pediat. 39:641-643, Nov. 1951.

Hoyne, A. L., and Riff, E. R.: Terramycin therapy for meningitis; a report of 14 recoveries without other medication. J. Pediat. 39:151-154, Aug. 1951.

Jawetz, E., Gunnison, J. B., and Speck, R. S.: Antibiotic synergism and antagonism. New England J. Med. 245:966-968, Dec. 20, 1951.

Kadison, E. R., and Borovsky, M. P.: Treatment of infantile diarrhea with new combination of antibiotics. J. Pediat. 38:576-589, May 1951.

Miller, C. P.: New problems in treatment of infectious diseases. Ann. Int. Med. 35:763-770, Oct. 1951.

Simon, S. W.: Hypoallergic penicillin: IV. Chlor-trimeton penicillin. Ann. Allergy 10:187-191, March-April 1952.

Spaulding, E. H.: Laboratory aspects of antibiotic therapy. Pediatrics 8:406-412, Sept. 1951.

Weinstein, L., Setser, R., and Marrow, C. T., III: Treatment of pertussis with aureomycin, chloramphenicol and terramycin. J. Pediat. 39:549-559, Nov. 1951.

Wooding, C. H., Jr., and Scott, R. B.: Terramycin in treatment of pneumonias of childhood; a report of 10 cases. J. Pediat. 38:423-427, April 1951.

Cranial Dysostoses

MAX MARCUS, A.B., D.O.
Allentown, Pa.

The occurrence of a congenital anomaly arouses curiosity in the scientific mind, but it may be the source of great concern and suffering to the affected individual and to his family. Congenital anomalies are as numerous as the tissues and organs of the body. Some develop into grotesque deformities, others remain inconspicuous; some are apparently harmless, and others are detrimental to life; and finally there are those which combine various of these characteristics.

It is the duty of the physician attending the newborn to examine it with infinite care in order to detect any abnormality. Unfortunately many anomalies are either overlooked or are so situated that their detection is not possible by external observation. Their existence is detected only when they begin to interfere with vital functions. When one anomaly is found, it is important to search for others, for congenital anomalies are usually found in groups.

Among the numerous developmental abnormalities of the skull is a group known as cranial dysostoses. In general, this group is characterized by delayed or defective ossification and development of the cranial bones. Comprising this group are cranial dysostosis, ocular hypertelorism, platybasia, and Lückenschädel.[1] These conditions may be detected by external examination, but roentgenographic examination is necessary to confirm the diagnosis.

Cranial dysostosis is a hereditary, congenital defect characterized by delayed and defective ossification of the cranial bones producing a broad head with prominence of the frontal and parietal eminences and dental abnormalities. When associated with aplasia of the clavicles, it is known as cleidocranial dysostosis. A large number of wormian bones usually are present throughout the defective ossification areas of the calvarium.

Ocular hypertelorism is a craniofacial deformity in which there is an increase in the breadth of the bridge of the nose with corresponding greater distance between the eyes. This anomaly, first described by Greig in 1924, occurs quite frequently in mild forms and is not accompanied by other disturbances; however, mental deficiency of varying degree is found in severe cases.[2]

Platybasia is an anomaly of the occipital bone and upper cervical spine, characterized by cephalic displacement of the odontoid and clivis resulting in encroachment upon the lumen of the foramen magnum and producing pressure upon the medulla and upper cervical cord.[1]

With Lückenschädel or cranial lacunae a skull may appear normal in size and shape or larger than normal, depending upon the intracranial pressure. On palpation, the skull feels plastic or spongy in consistency in contrast to the firm feeling of normal cranial bones. Upon further inspection, the cranial sutures may be found to be widely separated or normal and the fontanelles may or may not bulge, again depending upon the intracranial pressure.

X-ray examination of the skull reveals a honeycomb, net-like appearance, or corrugated configuration of the calvarium, caused by areas of demineralization separated by wedges of normal bone. These changes are most marked in the parietal regions but may often occur in the frontal and squamosal portions of the skull. There need be no separation of the sutures, enlargement of the skull, or bulging fontanelles unless the intracranial pressure is increased. However, since most of these cranial abnormalities are accompanied by internal hydrocephalus, the above features are found in many cases.

Lückenschädel was first observed by Engstler in 1905. Since then, a number of cases have been observed, one in my own practice. The condition apparently originates in utero since it has been seen roentgenographically only several days after birth and occasionally before birth.[3]

As is true in the case of all developmental defects, the etiology is obscure. One authority believes that the presence of defective ossification of the cranial bones suggests a deficiency state in utero.

Others believe that the frequency with which internal hydrocephalus and bulging of the fontanelles are associated with Lückenschädel suggests that increased intracranial pressure is the etiologic factor. But the frequency of associated skeletal defects, such

as spina bifida and congenitally dislocated hip, suggests that the skull changes may be caused by a generalized disturbance in bone formation. (A case recently observed by the writer presented lacunar skull, meningomyelocele, internal hydrocephalus, and bilateral clubfoot.) Probably a combination of the various factors mentioned is responsible.

The prognosis depends upon the severity and type of associated congenital defects. When Lückenschädel is present without any other defect, the outlook is excellent and the demineralized areas slowly disappear without any remaining defects. When associated internal hydrocephalus is present, the outlook is poor; the patient may survive for several months to a year.

There is no treatment for the cranial defect itself, therefore, treatment must be directed toward the other defects when present.

The purpose of this paper has not been merely to describe a rarity; rather it has been to point out that the presence of a seemingly insignificant defect, such as Lückenschädel, should become an incentive to search for other developmental abnormalities which are detrimental to survival or future development and to attempt to correct them, using all technical knowledge available today.

117 N. Eighth St.

REFERENCES

1. German, W. J., and Wilson, H. M.: Lesions of cranium, in Clinical radiology, edited by G. U. Pillmore. F. A. Davis Co., Philadelphia, 1946, Vol. II, pp. 18-38.
2. Caffey, J.: Pediatric x-ray diagnosis. Ed. 2. Year Book Publishers, Chicago, 1950.
3. Golden, R., ed.: Diagnostic roentgenology. Thomas Nelson & Sons, New York, 1948, Vol. I, p. 29T.

ADDITIONAL REFERENCES

Bucy, P. C.: Spina bifida and associated malformations, in Brennemann's Pediatrics. W. F. Prior Co., Hagerstown, Md., 1942, Vol. 4, Chapter 15, pp. 1-30.

Pancoast, H. K., Pendergrass, E. P., and Schaeffer, J. P.: Head and neck in roentgen diagnosis. Charles C Thomas, Springfield, Ill., 1940, pp. 80-81.

Book Notices

PRACTICAL BLOOD GROUPING METHODS. A Manual of Immunohematology. By Robert L. Wall, M.D., Department of Research Medicine, The Ohio State University Hospital, Columbus, Ohio; Formerly, Blood Research Section, Department of Biologic Products, Army Medical Department Research and Graduate School, Washington, D. C. Cloth. Pp. 175, with figures and charts. Price $5.00. Charles C Thomas, Publisher, 301 E. Lawrence Ave., Springfield, Ill., 1952.

This monograph is what its title proclaims it to be—practical. The author has employed the Fischer-Race system of nomenclature, which he feels is more easily taught and expressed than the Wiener system. He includes a comparison of the two systems and an appraisal prepared by the National Institutes of Health.

The book, which is intended for the use of pathologists, blood-transfusion workers, practicing physicians, hospital staffs, geneticists, and members of the legal profession, covers the development of the blood groups from the work of Landsteiner in 1900 up to the present. It includes the latest advances in blood grouping and all important applications, and a discussion of materials and methods.

MODERN SCIENCE AND MODERN MAN. By James B. Conant. Cloth. Pp. 111. Price $2.25. Columbia University Press, Morningside Heights, New York, 1953.

A former professor of chemistry, from 1933 until 1953 president of Harvard, currently United States High Commissioner for Germany, James B. Conant belongs to that group of exceptional professors and scientists who have taken the trouble to go behind the atoms and the energy they talk about to see if these fundamentals make sense.

Dr. Conant is aware that the educated person who may have only a smattering of science wants to know what matter, energy, motion, space, and the atoms of the physicist and chemist mean to him. What does science denote in cultural or humanistic terms? What is the effect of scientific progress on spiritual values? These are the questions which Dr. Conant puts to himself and causes his readers to ask. As in certain of his earlier books, he presses for an answer to the philosophic implications of modern science.

In the Bampton lectures delivered at Columbia during the past year, and which now make up the text under review, the author restates the thesis of his "Science and Common Sense," that science is "a series of interconnected concepts and conceptual schemes arising from experiments and observations." Such a definition of science leads him to the logical conclusion that a scientific method is not an immutable creed but "a policy, and economical and fruitful guide to action, by scientific investigators."

Persons who believe that religion has been undermined by science should be brought clearly to see that Dr. Conant's thesis excludes such a possibility because certain philosophic concepts and strong religious faith rest on something entirely different from scientific reasoning.

Science and spiritual values cannot be discussed as relativity is discussed.

By the Conant thesis the universe is beyond comprehension, and the search for what we vaguely and incorrectly call "truth" will go on as long as man does. This little book is not abstruse for it is simply and clearly written even though it deals with the questions man has put longest to Nature—"Why and whither?" And of course he will find no answer here, but he will acquire a better conception of the place of science in our own lives.

MODERN TREATMENT, A Guide for General Practice. By 53 Authors. Edited by Austin Smith, M.D., Editor of the Journal of the American Medical Association and Paul L. Wermer, M.D., Secretary, Committee on Research, American Medical Association. Cloth. Pp. 1146. Price $20.00. Paul B. Hoeber, Inc., 49 E. 33rd St., New York 16, 1953.

A group of postgraduate teachers have joined in creating a volume which presents the practical essentials of today's therapy. Edited by the editor and the secretary of the Committee on Research of the American Medical Association, this volume is an authoritative guide to treatment of most of the diseases the general practitioner is likely to encounter. The treatments represent those found effective by the contributors, but are not limited to their personal preference. The authors also attempt to take into account supportive measures, contraindications arising from complications, and feasibility of application.

Within the physical limitations of one volume, even if very large as is this one, it is impossible to include all of

therapy. Therefore, space has been apportioned where it seemed most necessary to provide a clear and usable discussion of the most important problems confronting practicing physicians. These include attention to individual variations in reaction to disease, physical and toxic agents, and drugs, and to diagnostic tests and technics which direct and affect treatment. And, as the editors state in the preface and carry out in the text—"Underlying the whole book is the principle that therapy involves much more than the simple prescription of medicaments. The patient, from the time he walks into the office door until he is discharged, must be regarded as a person with a complaint or a disease and not as a piece of isolated diseased tissue which is capable of locomotion."

ZINSSER'S TEXTBOOK OF BACTERIOLOGY. By David T. Smith, M.D., Professor of Bacteriology and Associate Professor of Medicine, Duke University School of Medicine; Norman F. Conant, Ph.D., Professor of Mycology and Associate Professor of Bacteriology, Duke University School of Medicine; Joseph W. Beard, M.D., Professor of Surgery in charge of Experimental Surgery, Duke University School of Medicine; Hilda Pope, Ph.D., Assistant Professor of Bacteriology, Duke University School of Medicine; D. Gordon Sharp, Ph.D., Assistant Professor of Biophysics in Experimental Surgery, Duke University school of Medicine; and Mary A. Poston, M.A., Instructor in Bacteriology, Duke University School of Medicine. Ed. 10. Cloth. Pp. 1012, with illustrations. Price $11.00. Appleton-Century-Crofts, Inc., 35 West 32nd St., New York 1, 1952.

Even when the first edition of this text was published in 1910, the authors' approach was one which made it of value to students of clinical medicine and public health as well as to students of bacteriology. Through successive editions the trend toward consideration of bacteriology in its broad aspects has been followed. With the preparation of the present edition, the vast expansion of the fields of medicine related to bacteriology has necessitated complete revision or rewriting of every chapter of the book. This has been done by members of the faculty of Duke University School of Medicine.

The chapters on bacterial diseases have been condensed to provide space for expansion of the chapters on viruses and viral diseases. Information on the susceptibility of organisms to antibiotics is emphasized, and available knowledge on the effects of ACTH and cortisone has been included.

This continues to be an outstanding text, from the standpoint of preciseness and dependability as well as from that of interesting content. It could be studied with profit and enjoyment by all physicians.

PRACTICE OF PSYCHIATRY. By William S. Sadler, M.D., F.A.P.A., Chicago. Consulting Psychiatrist to Columbus Hospital and Pinel Sanitarium; Fellow of the American Psychiatric Association; Member of the American Psychopathological Association. Cloth. Pp. 1183. Price $15.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1953.

Progress in the field of psychiatry has been so rapid that the author chose to rewrite rather than revise "Modern Psychiatry," even though it was published only 7 years ago. A new feature of this work is a section entitled Attitudinal Pathoses. "Pathosis" is a recently suggested term for preneurotic disorders. Another new section is devoted to psychosomatic medicine. The section on psychologic testing has been expanded and a number of tests added.

The text is divided into seven parts: General Psychiatric Considerations, The Pathoses, The Neuroses, The Psychoses, Personality Disorders, Psychosomatic Diseases, and Psychotherapy.

The frightening statistics on the incidence of mental disease in these times make it clear that any physician who is going to be able to give his patients the help they need must have knowledge of the psychiatric disorders and the states leading up to them. This book offers that knowledge in an understandable and understanding manner.

NUTRITION AND DIET in Health and Disease. By James S. McLester, M.D., Professor of Medicine Emeritus, University of Alabama; and William J. Darby, M.D., Ph.D., Professor of Biochemistry and Director of the Division of Nutrition, Vanderbilt University. Ed. 6. Cloth. Pp. 710, with figures and charts. Price $10.00. W. B. Saunders Company, West Washington Sq., Philadelphia, 1952.

The sixth edition of this standard text on nutrition is marked by the appearance on the title page of the name of a collaborator. By dividing responsibility, the authors have been able to revise the book completely and searchingly, to the extent that it has been entirely reset.

The growing recognition of the far-reaching effects of diet is reflected in the many additions to this edition. The sections on the vitamins have been completely reconsidered, with special attention to folic acid, vitamin B_{12} and vitamin B_6. Much information on the amino acids and the amino acid-vitamin relationship has been added, as have developments in the field of trace elements and other minerals.

The low-sodium regimen and the rice diet in hypertension are discussed from the standpoint of clinical application, and, in relation to the former, extensive tables are presented which list the sodium and potassium content of hundreds of foods and the public water supplies of about 200 towns and cities in the United States and the foods accepted by the Council on Foods and Nutrition of the American Medical Association for use in low-sodium diets. The new system of dietary equivalents for the planning of diabetic diets has been included. The management of nutritional anemias and deficiency diseases has been brought up to date.

The revisions, replacements, and additions of this edition, combined with the extensive bibliography and the detailed index, make this text thoroughly useful and usable.

BODY TEMPERATURE, Its Changes with Environment, Disease and Therapy. By W. A. Selle, Ph.D., Professor of Biophysics and Physiology, University of California Medical School, Los Angeles, California. Cloth. Pp. 112, with charts and figures. Price $3.50. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1952.

This little monograph is an interesting presentation of one of the great biologic fundamentals necessary to viability—the narrow temperature range within which mammalian life operates.

It would be difficult to find elsewhere in so succinct a form the basic facts that underlie any understanding of the regulation of body temperature in the human being—such basic knowledge would require a range of reference reading beyond the possibility of the most studious physician. The text is made practical by constant reference to the clinical results of heat disturbance in the human. It scarcely needs to be said that such a monograph has its greatest appeal to a doctor who has an inquiring mind, the individual who is not quite satisfied to rest his knowledge of body temperature at 98.6 F. (37.0 C.) for his entire professional lifetime.

POLIOMYELITIS. Papers and Discussions Presented at the Second International Poliomyelitis Conference. Compiled and Edited for the International Poliomyelitis Congress. Cloth. Pp. 555, with illustrations. Price $7.50. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia 5, 1952.

Included in this volume are the papers and discussions presented at the Second International Poliomyelitis Conference at Copenhagen in September of 1951. It is concrete evidence of the great advances made since the First International Conference was held in 1948. The interchange of information made possible by meetings of those engaged in research on poliomyelitis and practice with its victims intensifies the rate of progress toward conquering the disease and avoids waste of time and effort caused by duplication of projects. Publication of the proceedings makes available the best of present knowledge to all those interested, wherever they reside.

A NEW ORANGE JUICE FOR BABIES...

whether cup, bottle, or spoon fed

Guaranteed Vitamin C value → Oranges are specially selected for high ascorbic acid content. Carefully pasteurized to retain a *minimum* of 40 mg/100 cc.

Easy to digest → Special processing results in negligible amounts of peel oil . . . never more than .010%.

Highly acceptable to babies →

Made from tree-ripened unblemished oranges. Flavor-controlled with dextrose added when necessary to adjust sugar-acid ratio for year-round uniformity. Attractive natural fresh-fruit color.

Convenient for
• young mothers → Ready to serve. Extra finely strained and homogenized to go easily through regular nursing-bottle nipples.

Babies are our business... our only business!

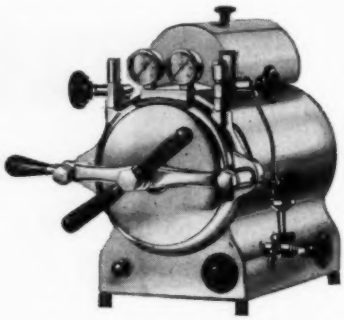
Gerber's BABY FOODS

4 CEREALS • 50 STRAINED & JUNIOR FOODS, INCLUDING MEATS

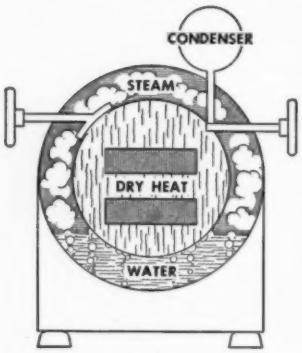
MOIST HEAT? DRY HEAT?

You get both *only* with

PELTON AUTOCLAVES



MODEL HP-2 • 8″ x 16″ Chamber



You need DRY HEAT to destroy bacteria covered by oil or grease

Proper technique in sterilizing syringes and needles in which certain antibiotics with oil carriers are used, or high-carbon steel instruments which corrode readily, calls for exposure to dry heat at 250° F. for at least four hours, preferably overnight. Only dry heat at 250° F. penetrates grease, oil or protein and destroys the bacterial life which it protects.

How the Pelton Sterilizes with Dry Heat

To use the Pelton Autoclave as a dry heat sterilizer, you insert the instruments in the inner chamber, lock the door, close both release valves so that steam will remain in the outer chamber and not enter the inner chamber. Turn on the switch for automatic operation overnight. The load will heat to 250° F. and in the morning your instruments will be safely sterilized, dry, and ready for use.

Only Pelton Autoclaves give both pressure steam and dry heat sterilization.

PELTON

THE PELTON & CRANE CO., DETROIT 2, MICHIGAN

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Seventh Annual Convention, Chicago, July 13-17, inclusive. Program Chairman, Roger E. Bennett, 203 S. Broad St., Middletown, Ohio.

American College of Osteopathic Obstetricians and Gynecologists, annual meeting, Hotel Statler, Los Angeles, February 16-19, 1954. Secretary, Arthur A. Speir, Box 57, Merrill, Mich.

American College of Osteopathic Surgeons, annual meeting, Hotel Statler, Los Angeles, October 18-22. Secretary, Orel F. Martin, Box 474, Coral Gables 34, Fla.

American Osteopathic Academy of Orthopedics, annual meeting, Hotel Statler, Los Angeles, October 18-22. Secretary, J. Paul Leonard, 2673 W. Grand Blvd., Detroit 8, Mich. Associate Program Chairman, Walter R. Garard, 809 S. Hobart Blvd., Los Angeles.

American Osteopathic College of Radiology, annual meeting, Hotel Statler, Los Angeles, October 18-22. Secretary, H. Miles Snyder, 5435 Woodward Ave., Detroit 2, Mich.

American Osteopathic Hospital Association, annual meeting, Hotel Statler, Los Angeles, October 18-22. Executive Secretary, Mr. R. P. Chapman, 1011 Kahl Bldg., 326 W. Third St., Davenport, Iowa.

American Osteopathic Society of Anesthesiologists, annual meeting, Hotel Statler, Los Angeles, October 18-22. Secretary, Crawford Esterline, Box 155, Kirksville, Mo. Program Chairman, Amanda C. Marshall, 766 S. Kingsley Dr., Los Angeles 5, Calif.

American Osteopathic Society of Proctology, annual meeting, Hotel Jefferson, St. Louis, Mo., April 29-May 1. Secretary, Carl S. Stillman, Jr., 3523 Fifth Ave., San Diego 3, Calif. Program Chairman, Felix D. Swope, 609 Farragut Medical Bldg., Washington 6, D. C.

Canada, annual meeting, Chateau Laurier, Ottawa, October 15-17. Secretary, Miss Joyce Currie, 609 Medical Arts Bldg., Montreal. Program Chairman, Douglas F. Lauder, 343 Queens Ave., London, Ontario. Exhibits Chairman, D. E. Firth, 80 King St., Toronto.

Florida, annual meeting, Tides Hotel, Reddington Beach, June 11-13. Secretary, Dominic Raffa, 5009 Central Ave., Tampa. Program Chairman, Edmund T. Flynn, Levy Bldg., Tallahassee, Fla. Exhibits Chairman, Calvin J. Houpt, 301 Call St., Starke.

Hawaii, annual meeting, Waikiki, Oct. 26-28. Secretary, J. W. Stella, Room 38, Young Hotel Bldg., Honolulu 9. Program Chairman, C. W. Wyman, 417 National Bldg., Honolulu 13.

Kentucky, annual meeting, Brown Hotel, Louisville, Sept. 16-17. Secretary, Harold D. Benteen, 2048 Winchester Ave., Ashland. Program Chairman, Martha Garnett, 417 Fincastle Bldg., Louisville.

Michigan, annual meeting, Civic Auditorium, Grand Rapids, Sept. 28-30. Executive Secretary, Mr. Harve L. Smith, 13535 Woodward, Highland Park. Program Chairman, L. W. Pettycrew, 1205 N. Michigan Ave., Saginaw. Exhibits Chairman, M. B. Goldberger, 2730 S. Washington, Saginaw.

New York, annual meeting, Hotel Statler, New York City, October 15-17. Secretary, Robert E. Cole, 417 Main St., Geneva. Program Chairman, W. Kenneth Riland, 71 Broadway, New York 6.

North Carolina, annual meeting, Battery Park Hotel, Asheville, October 16-17. Secretary, S. D. Foster, 710 Public Service Bldg., Asheville. Program Chairman, Elizabeth Smith, 414 Wachovia Bank Bldg., Asheville.

Rocky Mountain Osteopathic Conference, Broadmoor Hotel, Colorado Springs, November 13-15. Secretary, C. Robert Starks, 1459 Ogden St., Denver 18.

Vermont, annual meeting, Montpelier Tavern, Montpelier, September 30-October 1. Secretary, Howard I. Slocum, Battell Block, Middlebury. Program Chairman, Thomas P. Dunleavy, 162 N. Main St., Barre.

Western States Osteopathic Society of Proctology, annual meeting, Westward Ho Hotel, Phoenix, Ariz., October 12-14. Secretary, E. F. Waters, 925 E. South Temple St., Salt Lake City 2, Utah. Program Chairman, Lee R. Borg, 1130 W. Santa Barbara Ave., Los Angeles.

State and National Boards

COLORADO

Basic science examinations in June, Lecture Room, Second floor, YMCA Building, 16th and Lincoln Streets, Denver. Applications must be filed in advance. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 18.

CONNECTICUT

Professional examinations in July. Applications must be filed immediately after candidates have been notified that they have passed the Healing Arts Board. Address Frank Poglitsch, D.O., secretary, Osteopathic Examining Board, 300 Main St., New Britain.

ILLINOIS

Examinations June 30, July 1, 2 in Chicago. Applications must be filed 15 days in advance. Address Mr. C. Hobart Engle, Department of Registration and Education, Springfield.

INDIANA

Examinations June 17-19 at Indianapolis. Address Miss Ruth V. Kirk, executive secretary, Board of Medical Registration and Examination 1138 K of P Bldg., Indianapolis.

IOWA

Basic science examinations July 14, Capitol Building, Des Moines. Applications must be filed prior to examination date. Address Ben H. Peterson, Ph.D., secretary, Board of Basic Science Examiners, Coe College, Cedar Rapids, Iowa.

KANSAS

Examinations June 18-20 in Topeka. Address Forrest H. Kendall, D.O., secretary, Board of Osteopathic Examination and Registration, 420½ Pennsylvania Ave., Holton.

MARYLAND

Examinations June 27 in Baltimore. Applications must be filed as soon as possible. Address Christopher L. Ginn, D.O., secretary, Board of Osteopathic Examiners, 330 N. Charles St., Baltimore 1.

MASSACHUSETTS

Examinations July 14-17 at State House, Boston. Applications must be filed by June 30. Address Robert C. Cochrane, M.D., secretary, Board of Registration in Medicine, Room 37, State House, Boston 33.

MICHIGAN

Examinations June 16-18, Cadillac Square Bldg., 17 Cadillac Square, Detroit. Address P. Ralph Morehouse, D.O., assistant secretary, Board of Osteopathic Registration and Examination, 214 S. Superior St., Albion.

Charles J. Manby, Battle Creek, is secretary-treasurer of the Board. We regret that Dr. Manby's name was incorrectly reported in the May JOURNAL.

NEVADA

Professional examinations July 25 at 210 W. Second St., Reno. Applications must be filed 2 weeks before examination. Address Walter J. Walker, D.O., secretary, Board of Osteopathic Examiners, 210 W. Second St., Reno.

Basic science examinations July 7 at the University of Nevada, Reno. Application must be filed by June 25. Address Dr. Frank Richardson, secretary-treasurer, Board of Examiners in the Basic Sciences, University of Nevada, Reno.

NORTH CAROLINA

Examinations July 3-4 in Raleigh. Applications must be filed by June 15. Address F. R. Heine, D.O., secretary, Board of Osteopathic Examination and Registration, 926 Southeastern Bldg., Greensboro.

NORTH DAKOTA

Examinations in July in Minot. Applications must be filed prior to examination. Address G. L. Hamilton, D.O., secretary, Board of Osteopathic Examiners, Ringo Bldg., 119 S. Main St., Minot.

OREGON

Examinations July 9-10 at the University of Oregon Medical School Library, Portland. Applications must be filed by June 9.

Candidates for licensure by reciprocity or endorsement by the National Board are required to appear for an interview before the Board at its regular meeting upon July 24.

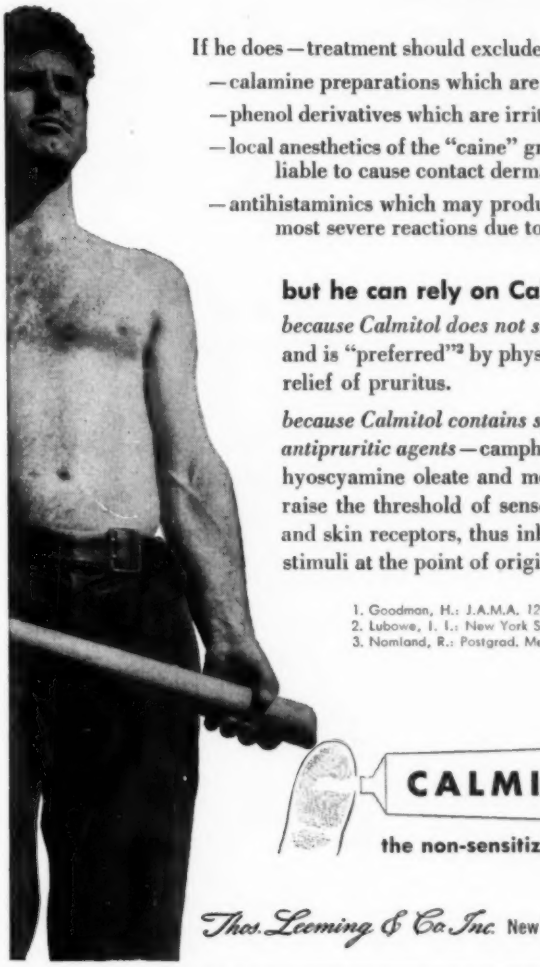
Completed application forms and all documents must be filed with the Board office *not later than June 24.* If you are awaiting the Oregon Basic Science Certificate, file application and the certificate may be forwarded later as *no applications* will be accepted after June 24.

Address Mr. Howard I. Bobbitt, executive secretary, Oregon State Board of Medical Examiners, 609 Failing Bldg., Portland 4.

RHODE ISLAND

Basic science examinations August 12, at 365 State Office Bldg., Providence.

he may or may not get poison ivy



If he does—treatment should exclude

—calamine preparations which are ineffective[1]

—phenol derivatives which are irritating[2]

—local anesthetics of the "caine" group liable to cause contact dermatitis[3]

—antihistaminics which may produce some of the most severe reactions due to sensitization[3]

but he can rely on Calmitol—

because Calmitol does not sensitize and is "preferred"[2] by physicians for safe relief of pruritus.

because Calmitol contains specific antipruritic agents—camphorated chloral, hyoscyamine oleate and menthol—which raise the threshold of sensory nerve endings and skin receptors, thus inhibiting itch stimuli at the point of origin.

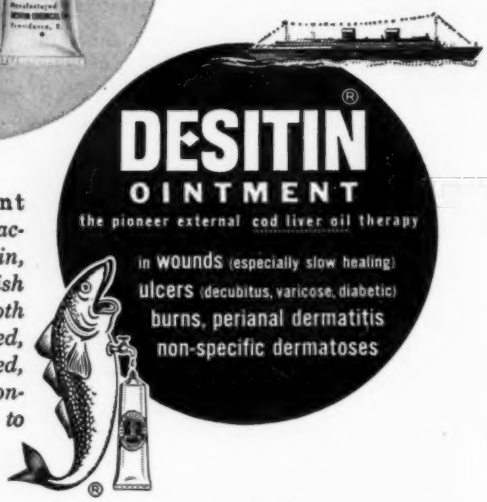
1. Goodman, H.: J.A.M.A. 129: 707, 1945.
2. Lubowe, I. I.: New York State J. Med. 50: 1743, 1950.
3. Nomland, R.: Postgrad. Med. 11: 412, 1952.

CALMITOL

the non-sensitizing antipruritic

Thos. Leeming & Co. Inc. New York 17, N.Y.

FULL SPEED AHEAD in TISSUE REPAIR



DESITIN Ointment *proves in everyday practice its ability to ease pain, renew vitality of sluggish cells, and stimulate smooth tissue repair in lacerated, denuded, chafed, irritated, ulcerated tissues—in conditions often resistant to other therapy.*[1-3]

Protective, soothing, healing, Desitin Ointment is a non-irritating blend of high grade, crude Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Desitin Ointment does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed.

Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.

write for **samples** *and literature*

DESITIN CHEMICAL COMPANY
70 Ship Street • Providence 2, R. I.

1. Behrman, H. T., Combes, F. C., Bobroff, A., Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.
2. Turell, R.: New York St. J. M. 50:2282, 1950.
3. Heimer, C. B., Grayzel, H. G., and Kramer, B.: Archives Pediat. 68:382, 1951.

Applications must be filed by July 27. Address Mr. Thomas B. Casey, Administrator of Professional Regulation, 366 Office Bldg., Providence.

TENNESSEE

Professional examinations July 29-30 at Nashville. Applications must be filed 15 days prior to examination. Address M. E. Coy, D.O., secretary, Board of Examination and Registration for Osteopathic Physicians, 1226 Highland, Jackson.

Basic science examinations July 2-3 in Memphis. Applications must be filed by June 10. Address O. W. Hyman, M.D., secretary, Board of Basic Science Examiners, 874 Union Ave., Memphis 3.

TEXAS

Examinations June 22-24, Texas Hotel, Fort Worth. Address M. H. Crabb, M.D., secretary, Board of Medical Examiners, 1714 Medical Arts Bldg., Fort Worth 2.

VERMONT

Examinations June 24-25 at State House in Montpelier. Applications must be filed June 15. Address Charles D. Beale, D.O., secretary, Board of Osteopathic Examination and Registration, Mead Bldg., Rutland.

WASHINGTON

Professional examinations July 13-15 in Seattle. Applications must be filed 15 days prior to examination. Address Mr. Robert L. Smith, Director, Professional Division, Department of Licenses, Olympia.

Basic science examinations July 8-9 in Seattle. Applications must be filed 15 days prior to examination. Address Mr. Robert L. Smith, Director, Professional Division, Department of Licenses, Olympia.

WEST VIRGINIA

Examinations June 24-25 at the Shenandoah Hotel in Martinsburg. Applications for examination must be received 10 days prior to the meeting of the Board which begins on June 23. Address W. S. Irvin, D.O., secretary, Board of Osteopathy, 202 Broadway, Berkeley Springs.

WISCONSIN

Professional examinations July 14-15 in the Public Service Building, Milwaukee. Applications must be filed by June 30. Address A. G. Koehler, M.D., secretary, Board of Medical Examiners, 46 Washington Blvd., Oshkosh.

REREGISTRATION OF OSTEOPATHIC LICENSES

June 1-30—Hawaii, resident, $5.00, nonresident, $2.00. Address Frank O. Gladding, D.O., secretary-treasurer, Board of Osteopathic Examiners, 504 Hawaiian Trust Bldg., Honolulu 48.

Before June 30—Delaware, $10.00. Address Joseph McDaniel, M.D., secretary, Board of Medical Examiners, 229 S. State St., Dover.

June 30—Virginia, $1.00. Address K. D. Graves, M.D., secretary, Board of Medical Examiners, 631 First St., S.W., Roanoke.

July 1—Idaho, $10.00. Address Mr. Britt Nedry, director, Bureau of Occupational Licenses, Room 354, State House, Boise.

July 1—Within period of 60 days following—Indiana, $5.00 for residents; $10.00 for nonresidents. Address Paul R. Tindall, M.D., secretary, Board of Medical Registration and Examination, 20 N. Pike St., Shelbyville.

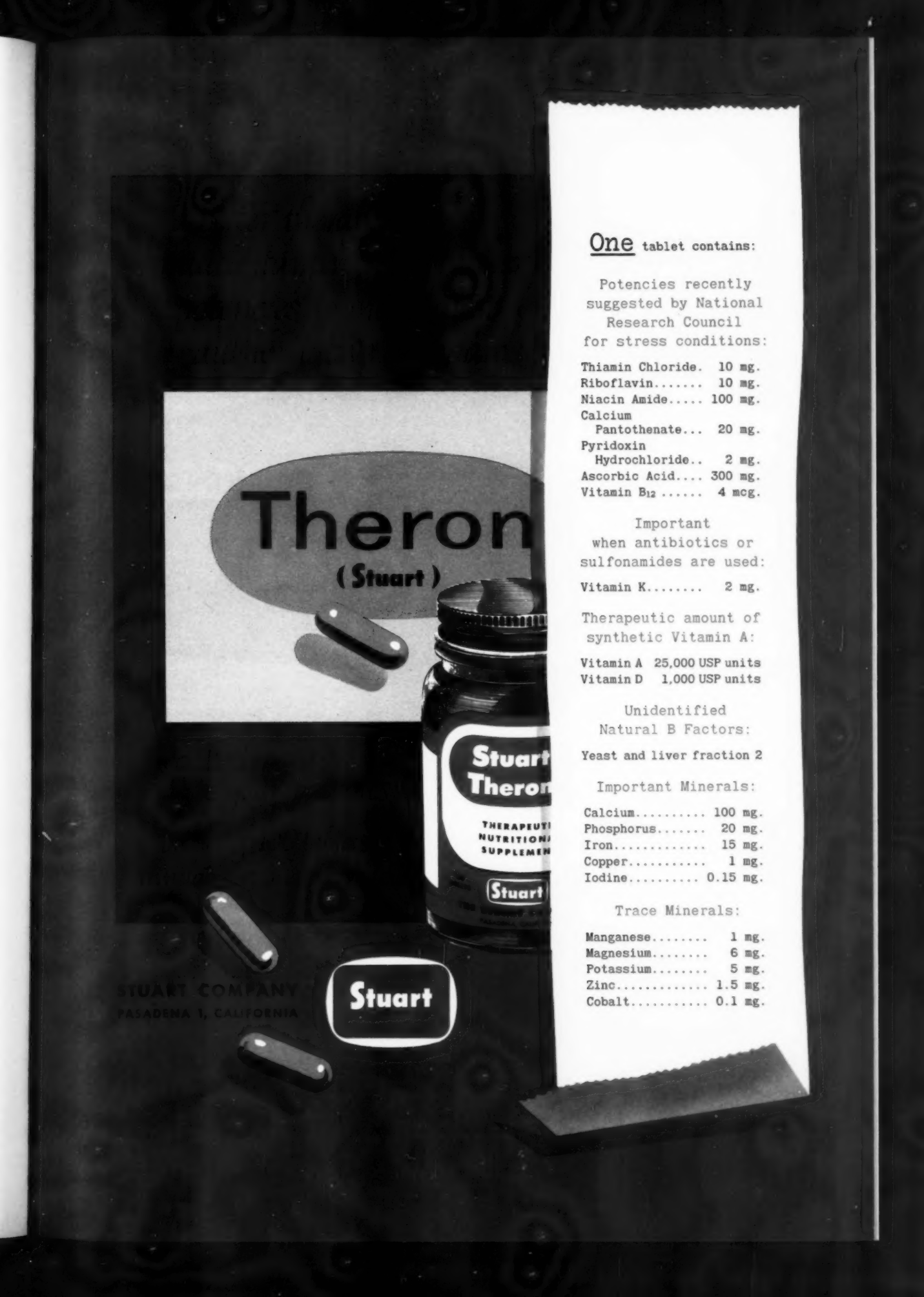
July 1—Kansas, $5.00. Address Forest H. Kendall, D.O., secretary, Board of Osteopathic Examination and Registration, 420½ Pennsylvania Ave., Holton.

July 1—Michigan, $5.00. Address P. Ralph Morehouse, D.O., assistant secretary, Board of Osteopathic Registration and Examination, 214 S. Superior St., Albion.

On or before July 1—New Mexico, $5.00. Address H. E. Donovan, D.O., secretary-treasurer, Board of Osteopathic Examination and Registration, Donovan Osteopathic Hospital, Raton.

July 1—North Dakota, $3.00. Address Gordon L. Hamilton, D.O., secretary-treasurer, Board of Osteopathic Examiners, Ringo Bldg., 119 S. Main St., Minot.

July 1—Oklahoma, $2.00. Address Ivan E. Penquite, D.O., secretary-treasurer, Board of Osteopathy, 202 Clayton Bldg., Sapulpa.



One tablet contains:

Potencies recently suggested by National Research Council for stress conditions:

Thiamin Chloride.	10 mg.
Riboflavin.....	10 mg.
Niacin Amide.....	100 mg.
Calcium Pantothenate...	20 mg.
Pyridoxin Hydrochloride..	2 mg.
Ascorbic Acid....	300 mg.
Vitamin B_{12}	4 mcg.

Important when antibiotics or sulfonamides are used:

Vitamin K.....	2 mg.

Therapeutic amount of synthetic Vitamin A:

Vitamin A	25,000 USP units
Vitamin D	1,000 USP units

Unidentified Natural B Factors:

Yeast and liver fraction 2

Important Minerals:

Calcium.....	100 mg.
Phosphorus.....	20 mg.
Iron.....	15 mg.
Copper.....	1 mg.
Iodine.....	0.15 mg.

Trace Minerals:

Manganese.....	1 mg.
Magnesium.....	6 mg.
Potassium.....	5 mg.
Zinc.....	1.5 mg.
Cobalt.....	0.1 mg.

NEW SPECIALLY CONSTRUCTED TABLET
RELEASES HYDROCHLORIC ACID
GRADUALLY INTO STOMACH AT A RATE
MORE CLOSELY PARALLELING NORMAL.

BETTER TOLERATED – MORE EFFECTIVE.

NORMACID TABLETS
(Stuart)

THE ACID THERAPY OF CHOICE

ADVANTAGES:

1. Specially constructed tablet releases hydrochloric acid in the stomach at a more normal rate. Eliminates disadvantages of the sudden release of HCl.
2. Permits larger dosage in one tablet; each tablet provides equivalent of 15 minims dilute HCl acid.
3. Better tolerated—more effective.

EACH TABLET CONTAINS:

440 mg. Betaine Hydrochloride
32.4 mg. Pepsin
110 mg. Methylcellulose (controls release of HCl)

Stuart

BOTTLES OF 100...available at all pharmacies

THE STUART COMPANY • PASADENA 1, CALIFORNIA

July 1—Tennessee, $5.00 to State Licensing Board for the Healing Arts and $1.00 to the Osteopathic Board. Both fees payable to M. E. Coy, D.O., secretary, Board of Examination and Registration for Osteopathic Physicians, 1226 Highland Ave., Jackson.

On or before July 1—West Virginia, $2.00. Address W. S. Irvin, D.O., secretary, Board of Osteopathy, 202 Broadway, Berkeley Springs.

September 1—Nebraska, $1.00. Address George P. Taylor, D.O., secretary, Osteopathic Board of Examiners, 827 Jackson St., Sidney.

September 1—Ohio, $2.00. Address H. M. Platter, M.D., secretary, State Medical Board, 21 W. Broad St., Columbus 15.

EXAMINATION BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary or the dean of the college, and the completed application blank, together with a passport photograph and check for the part to be taken, must be in the secretary's office by the November 1 or April 1 preceding the examination.

Examinations in Part I consist of anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; and bacteriology, including parasitology and immunology.

Part II consists of examinations in surgery, including applied anatomy, surgical pathology, and surgical specialties; obstetrics and gynecology; pediatrics; neurology and psychiatry; public health, including hygiene; medical jurisprudence; osteopathic principles, therapeutics, including pharmacology and materia medica.

Part III is an oral and practical examination given in Philadelphia, Chicago, Kirksville, and Los Angeles under the supervision of a chief examiner who is a member of the Board and by a panel of associate examiners. Subjects covered in Part III are anatomy; physiology; pathology; osteopathic principles, therapeutics, and pharmacology; surgery; ophthalmology and otorhinolaryngology; obstetrics and gynecology; physical and clinical diagnosis; public health and communicable diseases.

Eligibility requirements are as follows: Part I, satisfactory completion of the first 2 years in an approved school of osteopathy; Part II, satisfactory completion of Part I and of the first two quarters or trimesters of the senior year in an approved osteopathic college; Part III, satisfactory completion of Part II and at least 6 months of a 1 year's internship approved by the American Osteopathic Association. The internship requirement does not apply to candidates who took Part I prior to July, 1950.

for the "squeeze" of g.i. spasm
antispasmodic action
virtually without atropinism . . .
through the selective spasmolysis
of homatropine methylbromide
(one-thirtieth as toxic as atropine) . . .
plus the sedation of phenobarbital.
Each yellow tablet of MESOPIN-PB
or teaspoonful of yellow elixir
contains 2.5 mg. homatropine methylbromide and 15 mg. phenobarbital.
Also available as
MESOPIN Plain (without phenobarbital)
in white tablets, green elixir, and powder.
Trademark of Endo Products Inc.
MESOPIN-PB
Trademark
(Homatropine Methylbromide and Phenobarbital)
Endo
Samples? Just write to:
Endo Products Inc., Richmond Hill 18, New York

Application must be filed with the secretary of the Board not less than 30 days prior to the examination dates. Address Paul van B. Allen, D.O., secretary, 1512 N. Delaware Stret, Indianapolis 2, Indiana.

CHANGES OF ADDRESS AND NEW LOCATIONS

Allaby, E. E., from 1076 E. Colfax Ave., to Allaby-Downs Clinic, 1040 E. Colfax Ave., Denver 18, Colo.

Allgood, Frances, KCOS '52; 801 W. Jefferson St., Kirksville, Mo.

Ames, Philip V., from 1601 Griffith Park Blvd., to 3915 Sunset Blvd., Los Angeles 29, Calif.

Bamel, Solomon, from Detroit, Mich., to Carfaro Memorial Hospital, Broadway & Florence Ave., Youngstown 9, Ohio

Barnes, A. S., from Estes Park, Colo., to 613½ Main, Canon City, Colo.

Breul, Victor E., from 1581 W. Adams Blvd., to 1222 W. 99th St., Los Angeles 44, Calif.

Brint, Samuel, from 1832 Spruce St., to Central Medical Bldg., 18th & Chestnut Sts., Philadelphia 3, Pa.

Carlton, E. P., from 1301 Lipscomb St., to 1329 Alston St., Fort Worth 4, Texas

Casey, Wilbert B., COPS '52; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.

Cheney, James H., from 207 Paulton Bldg., to 626½ E. 21st St., Sioux Falls, S. Dak.

Chesemore, L. Dale, from 304-06 Commercial Bank Bldg., to 715 Morton St., Paris, Tenn.

Connelly, Joseph W., from 1550 Lincoln St., to 5108 W. 38th Ave., Denver 12, Colo.

Corrodi, Albert O., from 1012 Second Bank Bldg., to 6952 Plainfield Road, Silverton, Cincinnati 36, Ohio

DeJardine, George A., from 12 King St., E., to 34 Bank of Toronto Bldg., 205 Yonge St., Toronto 1, Ont., Canada

Dodds, Rex., from 310-12 N. Larchmont Blvd., to 7116 Melrose Ave., Los Angeles 46, Calif.

Downs, L. E., from 1076 E. Colfax Ave., to Allaby-Downs Clinic, 1040 E. Colfax Ave., Denver 18, Colo.

Equipped to meet the varying needs of your practice, the Ritter Universal Table, Type 2, includes as standard equipment—adjustable headrest, perineal cut-out, stainless steel irrigation pan, adjustable knee rest, stirrups and hand wheel tilt mechanism. Easily adjusted to any required position. The Type 2 Table has a motor-driven hydraulic base which raises patients silently, smoothly, from 26½" to 44½" with no effort on your part. Stirrups are concealed when not in use. Sponge rubber cushions give added comfort to patients.

See your Ritter dealer now for a demonstration of the Ritter Universal Table and other Ritter equipment for your profession.

Ritter
COMPANY INCORPORATED
BUILT UP TO A STANDARD NOT DOWN TO A PRICE

RITTER PARK, ROCHESTER 3, N. Y.

Dunn, William J., from 10302 Grand River Ave., to 92 Peterboro, Detroit 1, Mich.
Farrington, Ralph A., from 43 Evergreen St., to Massachusetts Osteopathic Hospital, 222 South Huntington Ave., Jamaica Plain, Boston 30, Mass.
Finer, J. A., from Lubbock, Texas, to 4141 Market St., Youngstown 12, Ohio
Flynn, Edmund T. "Pat", from Levy Bldg., to Petroleum Bldg., 226 W. Pensacola St., Tallahassee, Fla.
Frymann, Viola M., from 1124 Wall St., to 7754 Ivanhoe St., La Jolla, Calif.
Gams, Helen K., from 5715 H.M.C. St., to 2122 Cheshire Lane, Houston 18, Texas
Ganz, Samuel B., from Joplin, Mo., to 4226 Ocean Drive, Corpus Christi, Texas
Gillett, Claude S., from 1259 W. Manchester Ave., to 1261 W. Manchester Ave., Los Angeles 44, Calif.
Hamilton, Robert L., from Tyler, Texas, to Box 86, Mabank, Texas
Hase, Keigo, from 13240 Euclid Ave., to 8608 Hough Ave., Cleveland 6, Ohio
Henery, Helen M., from Kansas City, Mo., to 525 Old Robstown Road, Corpus Christi, Texas
Henery, John G., from Kansas City, Mo., to 525 Old Robstown Road, Corpus Christi, Texas
Herr, Sanford S., from Newberg, Ore., to Box 413, Taft, Ore.
Honeywell, Roy W., from Sneedville, Tenn., to Decatur, Tenn.
Hoover, George O., from 5 S. Main St., to 91 S. Main St., Oberlin, Ohio
Hoxie, Lloyd B., from 247 N. Gratiot Ave., to 39047 Harper, Mount Clemens, Mich.
Hull, Keith L., from Mount Ayr, Iowa, to 3503 Bluebonnet Circle, Fort Worth 4, Texas
Hunter, Victor Russell. KCOS '52; Fort Worth Osteopathic Hospital, Inc., 3705 Camp Bowie Blvd., Fort Worth 7, Texas
Hutchins, John P., from San Diego, Calif., to 816 DeYoung Bldg., 690 Market St., San Francisco 4, Calif.
Hutton, Walter W., KCOS '52; McCormick Osteopathic Hospital & Clinic, Inc., 309 Grand Ave., Moberly, Mo.
Jackson, Paul R., from Columbus, Ohio, to 110½ N. Court St., Circleville, Ohio
Johnson, Anna C., from Philadelphia, Pa., to Summerville, S. C.
Johnson, Ernest A., from Philadelphia, Pa., to Summerville, S. C.
Juhlin, H. B., from 120 W. Cass St., to 221 W. Washington, Greenville, Mich.
Kaplus, Albert, from New York, N. Y., to 3600 Fieldston Road, Bronx 63, N. Y.
Keckler, J. W., from 13240 Euclid Ave., to 924 E. 152nd St., Cleveland 10, Ohio
Kelley, Robert R., from 15945 W. Seven Mile Rode, to Norwest Clinic, 15924 W. Seven Mile Road, Detroit 35, Mich.
Kring, Robert B., from Jackson, Mich., to 105 Spanish St., Cape Girardeau, Mo.
Lacks, Charles K., from Boston, Mass., to LaSalle Hotel, Milwaukee, Wis.
Lavell, Louis W., CCO '52; Waldo General Hospital, 8511 15th Ave., N.E., Seattle 5, Wash.
Lavin, Arnold A., from Gardena, Calif., to 12719 Washington Place, Venice, Calif.
Loeb, Reuben B., from 8037 Frankford Ave., to 8171 Castor Ave., Philadelphia 15, Pa.
Logan, Fred E., from Joplin, Mo., to 2920 Hamilton Road, Corpus Christi, Texas
Malet, Sidney, PCO '52; 5 Astronomy Lane, Levittown, L. I., N. Y.
Mannick, Louis, from Lynwood, Calif., to 1259 W. Manchester Ave., Los Angeles 44, Calif.
Margreiter, John L., Jr., from Flat River, Mo., to Normandy Osteopathic Hospital, 7283 Natural Bridge Road, St. Louis 21, Mo.
Miller, Newton F., from Queens Village, N. Y., to 89-25 175th St., Jamaica 32, L. I., N. Y.
Moates, John B., from Tishomingo, Okla., to Northside Clinic, 3307 N. Main St., Fort Worth 6, Texas
Moore, Ralph L., from Crestline, Calif., to 602 E. Florida Ave., Hemet, Calif.
Nelson, Elmer Trygve, from 6325 Ellsworth Ave., to 27101 Plymouth Road, Detroit 28, Mich.
Nelson, Fred D., from 4362 Leimert Blvd., to 4340 Leimert Blvd., Los Angeles 8, Calif.
Panakos, Paul William, from 1712 Windsor Road, to 1926 N. Gettysburg Ave., Dayton 9, Ohio
Quartel, H. Ward, from 213 Orange Ave., to 533 Seabreeze Blvd., Daytona Beach, Fla.
Reichstadt, Paul R., from 305 S. 38th St., to 121 N. 38th St., Omaha 3, Nebr.
Remmetter, L. J., Jr., from New York, N. Y. (in Service), to 609 Arcue Bldg., Springfield, Ohio (Released from Service)
Rutter, Paul T., from St. Petersburg, Fla., to Osteopathic Clinic & Hospital, 215 E. Jackson Blvd., Medford, Ore.
Serra, Harold A., from Detroit, Mich., to 1475 Ford Ave., Wyandotte, Mich.
Shaffer, L. S., from 2334 N. High St., to 2425 N. High St., Columbus 2, Ohio
Shelly, C. Richard, from 231 N. Main St., to 801 Church St., Belen, N. Mex.
Short, Richard L., Jr., from Miami, Fla., to 2905 S. State Road #7, West Hollywood, Fla.
Simcox, Thomas Williams, from 4128 Norse Way, to 350 E. Market St., Long Beach 5, Calif.
Smith, Crews Z., from Shidler, Okla., to Brookfield Hospital, Brookfield, Mo.
Snoke, John W., from 43 Evergreen St., to Massachusetts Osteopathic Hospital, 222 S. Huntington Ave., Jamaica Plain, Boston 30, Mass.
Stebbins, Ernest L., from 4618 Saloma Ave., to 14619 Ventura Blvd., Sherman Oaks, Calif.
Stephens, James E., from Joplin, Mo., to 4329 S. Alameda St., Corpus Christi, Texas
Stohlberg, G. A., from 2933 Hennepin Ave., S., to 2748 Hennepin Ave., Minneapolis 8, Minn.
Tanner, Doris M., from 405 Sterling Trust Bldg., to 2228 Albert St., Regina, Sask., Canada
Tasker, Dain L., from Route 1, Box 201, to 1728 Whaley St., Oceanside, Calif.
Taylor, L. L., from 107 S. William St., to 115 N. Taylor St., South Bend 3, Ind.
Tengblad, Malcolm A., from 2356 W. 63rd St., to 7821 S. Western Ave., Chicago 20, Ill.
Thompson, Homer M., from 1608 Washington St., to 2204 Julian Blvd., Amarillo, Texas
Thomsen, Frederick H., from Jamaica, N. Y., to 1464 Washington Ave., Seaford, N. Y.
Varrelman, Roderick M., from Portland, Ore., to Canyonville, Ore.
Walsh, Lennox A., from 11835 Sanford, to 17190 Greenlawn, Detroit 21, Mich.
Weinberg, Herbert, from Camden, N. J., to 618 Medical Arts Bldg., 16th & Walnut Sts., Philadelphia 2, Pa.
Willard, Ralph L., from Manchester, Iowa, to Still Osteopathic Hospital, 725 Sixth Ave., Des Moines 9, Iowa
Zipperer, William P., from Bad Axe, Mich., to 18620 Russell, Detroit 3, Mich.

APPLICATIONS FOR MEMBERSHIP

CALIFORNIA

Hamilton, J. C., (Renewal) 740 S. Flower St., Los Angeles 17
Higger, Louis, (Renewal) 722 S. Western Ave., Los Angeles 5
Kaiser, Walter, 6022 Wilshire Blvd., Los Angeles 36
Curtis, Cecil C., (Renewal) 1706 Broadway, Oakland 12
Bowman, James A., (Renewal) 116 S. Euclid Ave., Pasadena 5
Smith, Carl W., (Renewal) 525 W. Eighth St., San Pedro

FLORIDA

Gateman, David, (Renewal) 2700 Biscayne Blvd., N., Miami 37

INDIANA

Fordice, R. N., (Renewal) 314 W. Third St., Rushville

MISSOURI

Raymond, Mildred L., (Renewal) Connor Hotel, Joplin
Sutton, Frank L., (Renewal) Box 334, Winfield, Mo.

TEXAS

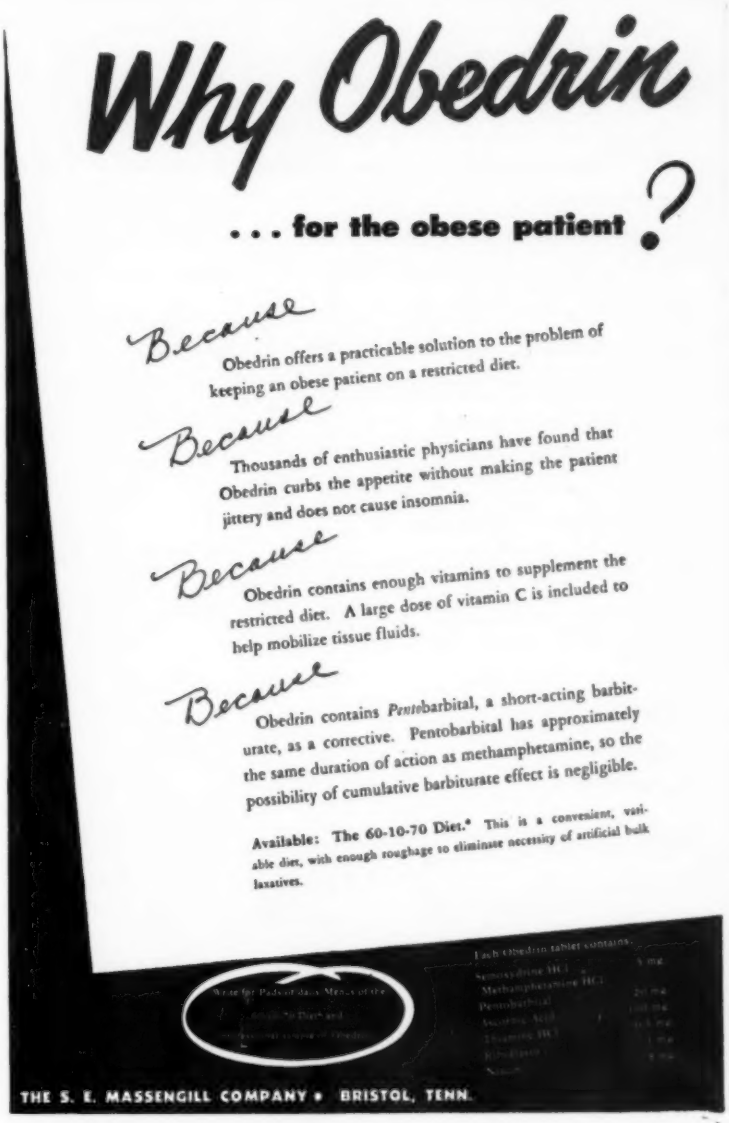
Vowell, Owen, (Renewal) 116 S. Glenwood, El Paso
Gafford, Nathaniel B., (Renewal) 4015 Curzon, Fort Worth 7
Rogers, Gilbert S., (Renewal) 3823 Avenue O., Galveston
Fisher, Frances Sue King, 115½ W. Tyler St., Gilmer

ONTARIO, CANADA

Curry, Homer B., (Renewal) Royal Bank Bldg., 105 Bruce St., Sault Ste. Marie

GRADUATES OF CHICAGO COLLEGE OF OSTEOPATHY JUNE 7, 1953

Amundson, Gerald Aldee
Athens, William
Becker, Carl Gene
Beechnau, Louis Howard
Brewer, Nelson William
Brickner, Gerald
Brooks, Robert Allen
Brzezinski, Stanley Edward
Chamberlain, Darrell Harry
Chauvin, John Hector
Cheney, Jerome Franklyn
Cohen, Norman Harvey
Collins, Archie
Conley, Charles Raymond
Cratty, Walter
Danny, Peter Samuel
Decker, Almeda Ann
De Luise, Frank Anthony
Dott, Raymond Neil
Downing, Wilbur Joseph, Jr.
Eckert, Richard Ross
Ellis, Melville Harry
Everingham, Donald James
Finley, John Howard, Jr.
George, Frank William
Griffiths, William Shane
Harnden, Richard Lloyd
Heller, Richard Eugene
Hill, Albert Samuel
Howe, Paul Frederick
Imhoff, David Eugene
Kallet, Charles Clifford
Kik, Richard, Jr.
Krates, George Nicholas
Krieg, Eugene James
Krug, James Russel
Leavitt, Clifford Adolph
Leonard, Willard Waite
Meeker, Jack Franklin
Molisky, Albert
Moore, Robert Louis
Myers, Henry
Nash, Ernest Frank (Ignasiak)
Niles, James Elmer
Nimmer, Wilbur Alvin
Nowland, Robert Gerald
Orum, Robert Eugene
Pelino, Carl Joseph
Rasmus, Charles Henry
Rose, William Lawrence
Runyon, Sidney Sanford
Schoen, Paul Frederick, Jr.
Sievers, Richard Joseph
Thatcher, Wayne Logan
Thompson, Curtis
Threlkeld, Colin Hodge, Jr.
Thulin, John A.
Tibbetts, Austin Burton, Jr.
Torres, Manuel
Turner, Kenneth Elmore
Wesley, Adeline Mary
Wharton, John Donald
Witte, Henry William, Jr.


Why Obedrin
. . . for the obese patient ?
Because
Obedrin offers a practicable solution to the problem of keeping an obese patient on a restricted diet.
Because
Thousands of enthusiastic physicians have found that Obedrin curbs the appetite without making the patient jittery and does not cause insomnia.
Because
Obedrin contains enough vitamins to supplement the restricted diet. A large dose of vitamin C is included to help mobilize tissue fluids.
Because
Obedrin contains Pentobarbital, a short-acting barbiturate, as a corrective. Pentobarbital has approximately the same duration of action as methamphetamine, so the possibility of cumulative barbiturate effect is negligible.
Available: The 60-10-70 Diet.* This is a convenient, variable diet, with enough roughage to eliminate necessity of artificial bulk laxatives.
THE S. E. MASSENGILL COMPANY • BRISTOL, TENN.

GRADUATES OF COLLEGE OF OSTEOPATHIC PHYSICIANS AND SURGEONS JUNE 19, 1953

Arellano, Eugene Walter
Babcoke, Robert Earl
Bailey, Robert Victor
Barnes, Frank Allen
Baron, Milton
Beeman, Donn David
Blumenson, Walter
Brandman, Morrie
Campbell, Warren Charles
Chadney, John Douglas
Charles, John Seymour
Chersky, Joseph
Chew, Wilbur
Claus, Leslie Vern
Collinge, Philip Kirkwood
Coomer, Ural David
Cortum, Donald Guy
Cozen, Harold
Crane, Lester Lowell
Craven, Douglas Kelly
DeLille, George Alphonse
Dight, Reardon Edward
Drapkin, Harold
Feinman, Leonard Cecil
Fife, Marlin Albert
Franklin, James Everett
Gautschi, William Warren
Glatt, Bernard
Goldfisher, Joseph Simon
Goyette, Robert Elmer
Greenwald, Alan Edwin
Harstad, Calvin D. L.
Honigman, James Milton
Humphrey, Thomas Orral
Irwin, Lowell Eugene
Johnson, Merwin Robert
Kahn, Marshall Alan
Kandel, Morris Aaron
Kemp, Charles Edwin
Kendrick, Muriel Anita
Kintner, David Gilbert
Kleyn, Claude Herbert
Kornblatt, Melvin Bernard
Kowan, Joel Marcus
Krongold, Herbert Myron
Larson, Don LeRoy
Leavitt, Joseph Allen
Lindenbaum, Arnold Marvin
Long, James Claborne
Lyon, LeRoy Harvey, Jr.
Macy, James Winthrop
Mahan, Glenn William
Manley, Charles Gilford
Marcus, Herbert
Martin, Carroll James

ANE-MA-TIN

for rapid and sustained response . . .

More than iron, alone, is needed for accelerated recovery in hypo-chromic anemia. With this new and outstanding hematinic, not only iron is supplied in sufficient therapeutic quantities (and in the ferrous form, which is better absorbed by the human being), but also all the elements known to be essential for the development and maturation of red blood cells.

Each capsule contains:

Ferrous Sulphate (equivalent to 57.7 mg. free iron)	194.4 mg.
Liver, Desiccated, N.F.	200 mg.
Stomach Substance	100 mg.
Vitamin B-12 (U.S.P. Crystalline)	10 mcgm.
Vitamin C	50 mg.
Folic Acid	1 mg.

Suggested dosage: One capsule three times daily before meals.

Supplied in our standard package, containing 60 capsules.

WOODARD LABORATORIES, INC.

2308 West 7th Street Los Angeles 5, California
DUnkirk 7-3158

Los Angeles • San Francisco • Portland • Akron • Detroit • Dallas
Denver • Wichita • Kansas City (Mo.) • St. Louis
Baltimore • Vancouver, B. C.

McClary, Robert Warren
Messenger, David Leroy
Mintz, Gilbert
Montgomery, Harold Lloyd
Mooring, Wyndham Wheatley
Nelson, Albert John
Newhouse, Robert Morris
Newman, Donald David
Owens, Robert Frank
Pilson, Victor Morris
Platt, John Turner
Redwine, James Woodrow
Reves, George Oren
Riegel, Harry Irvin, Jr.
Robinson, Russell Eugene
Schneider, John Leo
Seaman, Robert Frederick
Snyder, Samuel Lloyd
Steinberg, Harry
Streny, Eugene Frank
Strohm, Charles Fred
Suffin, Gustave
Vincent, Elmo Henry
Waxman, Samuel
Wood, Reynold Walker
Yankowitz, Philip
Young, Ralf Irwin
Zwick, William Fred

GRADUATES OF DES MOINES STILL COLLEGE OF OSTEOPATHY AND SURGERY
JUNE 6, 1953

Arvant, William, Jr.
Ballinger, Richard Bowling
Belanger, Robert Dale
Benton, Regis Anthony
Blackwell, Ralph Charles
Botz, Robert John
Bovee, Victor Joseph, Jr.
Cash, Phillip Sumner
Chapman, Joseph Dudley
Conway, Allyn Walder
Cronk, Richard Thomas
Dakovich, Milton John
Evanoff, Stephen August
Fern, Donald Edwin
Fredericks, Teddy Roosevelt
Georgeson, Peter Emmanuel
Gonda, William Ralph
Goodman, Louis
Hall, Kenneth Ferrell
Hatchitt, Jack Willis
Hayes, Robert Ralph
Herman, Walter Eugene
Kapp, Joseph Robert
Kemp, George Lee
Lambert, Ralph Dell
Latini, John Julio
Lawrence, Ronald Melvin
Levine, Edward J.
Little, Herbert Jack
Lowry, Marshall Estus
Marmon, Milton Walter
Martin, James Arthur
McCaleb, Beverly L.
McCormick, Loyal LeRoy
McLain, William Wallace
McLoyd, Michael Joseph
Miller, Arnold Stephen
Miller, Charles Howard
Moylan, Thomas Joseph
Nash, Gerard Karron
Nichols, William James
Nystrom, Leonard Clark
Olson, Albert Renghold
Owens, Chester Raymond
Petty, Zane Howard
Pigneri, Aldo Grazioso
Ribbentrop, Paul Henry
Rosman, Donald
Ross, William Albert, Jr.
Rostek, Sigmund
Rutter, Paul Herbert
Sayers, Owen Edwin
Simon, Arthur
Spurgeon, Patricia Elizabeth
Stahlman, Robert Keck
Sutton, Sara Esther
Taylor, Kenneth Chase
Taylor, Raymond Gaskill, Jr.
Thorne, Lewis Eugene
Tracy, Dean Ellison
Walker, Lee James
Walters, Earl Vance
Warren, Paul Maxwell
Wilcher, Charles Franklin, Jr.
Wise, Victor Roy
Woofenden, Stewart Walter

GRADUATES OF KANSAS CITY COLLEGE OF OSTEOPATHY AND SURGERY
MAY 29, 1953

Ackley, Eugene Edward
Baldwin, Galen Leroy
Barrette, Roger A.
Bennett, Morris Francis
Bennett, Thomas Edward
Bricker, Leo Dale
Burroff, Dale William
Carver, Robert Ward
Davis, Grant
DeSio, Francis J.
Eakin, Donald Lee
Eckert, George Lewis, Jr.
Flora, Homer Nusbaum, Jr.
Fraser, Robert Frederick
Froncek, Theodore Joseph
Haight, Alfred Roscoe
Harris, Noel Edwin
Hayes, Donald Mac
Helfrey, Richard Berard
Hickey, Raymond J., Jr.
Hill, Josh
Hocka, Frank Joseph
Howell, Kermit
Iammatteo, Pat
Imamura, Eugene Hachiro
Inglett, Virgil Charles
James, Lester Harvey
Kelley, Robert Paul
Kennedy, Donald Raymond
Kuonen, Martin Edward
Lee, Robert Quon
Legg, William J.
Lewandowski, Ernest Anthony
Lombardino, Carl Joseph
Lyons, Calvin Joseph
Mahler, Lawrence Philip R.
Malone, Edward Ray
Mason, Robert E.
Mauk, James Madison, Jr.
McCorkle, Jack Warren
McDaniel, T. C.
Milazzo, Tommy Lawrence
Moylan, Patrick James
Patterson, Glenn Arthur
Payne, Richard Arthur
Philbrick, Emil Arthur
Polsinelli, Jerry
Pryor, William Frederick
Rapp, Vincent Joseph
Rasak, John C.
Rich, Dominic Richard
Rompf, George H.
Roth, Robert Leeland
Russell, John Frederick
Salman, Samuel Jerome
Saperstein, Phillip Paul
Serbin, Harold
Shaub, Victor Warren
Shipman, Harold Louis
Simonian, Ralph Myron
Smith, Howard Arthur
Smith, Selden Emerson
Stroehlein, John Arnold
Sunderwirth, William C.
Taylor, Jack Kenneth

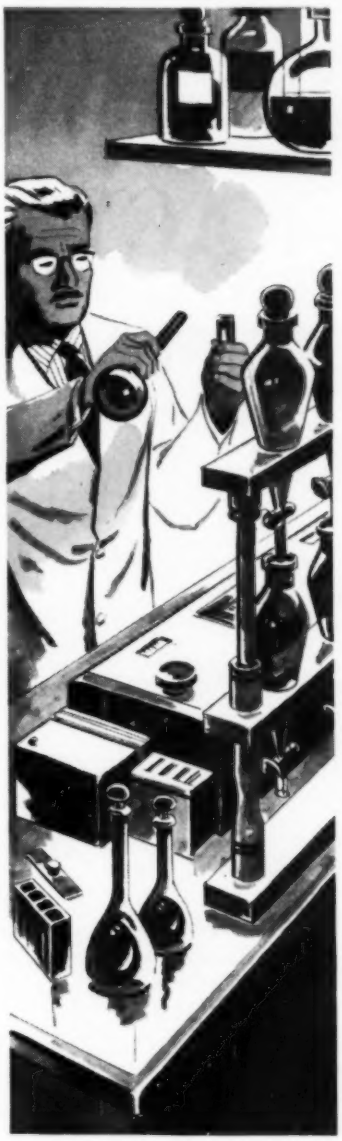
Toler, Robert John
Trawick, Paul Eugene
Voit, William Augustine
Weaver, Frank Marsh
Werhan, Charles Eugene
Wetzel, Richard Earl
Wilson, Cleo David
Zammar, Charles Joseph
Zulkey, Leroy

GRADUATES OF KIRKSVILLE COLLEGE OF OSTEOPATHY AND SURGERY MAY 29, 1953

Adelman, Nathan
Armond, Richard Hendry, Jr.
Barnett, Jackie Eugene
Barnhill, Leonard L.
Bean, Roger Allen
Beemblossom, Donald Marion
Benner, Henry Irwin
Bilyea, David Logan
Boczkowski, Anthony Edward, Jr.
Brandeberry, Carl Kent
Brolinson, Per Yngve
Bush, Robert Archie
Bye, Eivind Gardner
Carlson, William Richard
Caton, James Wayne
Clifton, Arthur Lovelock
Cobb, Richard David
Cooper, Ralph Dayton
Corbett, Lawrence Edwin
Cotton, Edmund Wiley
Couts, Fred Alton, Jr.
Cowger, John Leland
Daraban, George
De Lucia, Eugene Rudolph
Dickenson, Glenn Orville
Dix, Kenneth Harlan
Ehlinger, Norman Joseph
Fiedler, William Albert
Ghormley, Lee F.
Green, Bernard
Hallidy, Fisk Edwin
Hartigan, John Burrill
Hatch, Bill Parry
Hayden, Ralph Hedgcock
Hensley, Henry
Herrmann, Edward Paul
Hornick, Lawrence
Horowitz, Arthur Bernard
Hoyt, Bernard Sargent
Jay, Byron Bert
Johnson, Bruce Cal
Kehoe, Edward Patrick
Klouw, Floyd John
Lamb, Richard Feree
Landis, Martin Stanton
Lemley, Cleatis Dalton
Lichty, Harry Arthur
Lirones, David S.
Lovett, Joseph John
Lowell, Harry Fenton
Lowery, Guy Arman
Mahoney, Kenneth John
Manin, Samuel
Mote, Bill Gene
Murray, Edward Cornelius
Myers, Billy Jack
Nowicki, Irene Joan
Odell, Billy Gene
Petermeyer, Bruce Edward
Pickens, Rankin Ray
Ponek, Benjamin
Ratner, Lawrence Barry
Reed, William Beck
Reilly, Richard Elbert
Ridgeway, John Harvey
Riley, Loyd Hart
Rose, Virgil Jefferson
Rubin, George Sidney
Ruettinger, Harold, Jr.
Ruffle, John Raymond
Schroeder, Clifton George
Sheiner, Leo
Shipley, Robert Neil
Slaughter, Ernest L.
Sparks, Harold Tippett
Stager, Frank Eugene
Starks, Charles Robert, Jr.
Topol, Herbert
Townsley, Harry Edward
Turner, John Charles
Valdivia, Rodolfo Carlos
Wagner, William A.
Walters, William Shadford
Webber, Leighton Charles
Werner, Bertram Cecil
White, Leslie R.
Willisma, Charles Harrison
Yurkon, Edward John

GRADUATES OF PHILADELPHIA COLLEGE OF OSTEOPATHY JUNE 15, 1953

Abessinio, Daniel A.
Adler, Jerome J.
Aquila, Michael Richard
Axelrod, Alfred
Barnes, Leland A.
Belz, Francis X.
Billings, William Stanley
Brick, Philip A.
Brill, Jack J.
Brooks, John E.
Brown, Donald S., Jr.
Brumm, Lynn F.
Budzynski, Stanley G.
Campisano, Peter J.
Childers, Leland E.
Christensen, Norma Joyce
Conti, Gustave V.
Costabile, Michael A.
Crispell, Russell M.
Danon, Milton
Denlinger, Fairman L.
Erb, Jacqueline V.
Falcone, John G.
Fishbein, Sidney
Fresolone, Joseph Philip
Galliher, James Elihu
Gaul, John W.
Geller, Murray
Ginsburg, Abe
Ginsburg, Joseph
Goeller, Jack E.
Goldberger, Fredric
Goulding, John Graham
Greenberg, Gordon
Guyer, Seymour
Haduck, Walter Edward
Hafer, Robert K.
Hirschberg, Herman G.
Jacobs, John C.
Joye, Jennings Bryant, Jr.
Keagy, Marvin M.
Kuehlhorn, Robert E.
Kurn, Frederick C.
Kwoka, Chester S.
Lerch, Gordon L.
Little, Earl M.
Loeb, Estelle Siekierka
Longacre, John C.
Margulies, Sidney
Minniti, Alexander A.
Muggler, Frank E.
Nassau, Philip
Oyle, Irving
Palazzi, Michael Anthony, Jr.
Papel, Leonard Samuel
Parsons, George R.
Paul, Sanford J.
Pellosie, John C.
Perloff, Reuben M.
Phelps, Robert Douglas
Polchlopek, Vladimir M.
Quarles, James Harold



When your patient complains he's

..tired

..rundown

..has no appetite

...and there is no organic or pathologic reason for his complaint

...nutritional deficiencies

may be suspect

The struggle for survival, in our present-day, highly mechanized and overly competitive world, places a tremendous drain on the nervous system and requires rich red blood of high oxygen carrying capacity to meet its demands. When the nutritional status of persons in such an environment (and it is not limited to city dwellers) ebbs just a little . . . fatigue takes its toll. HEMAFUSION (DPS Formula 111) provides essential members of the B-Complex (Vitamin B_1, Vitamin B_{12}, and Niacin) with Iron as a nutritional supplement in a base of specially prepared stomach and duodenal substances. It is often most effective in these cases. Have a supply of HEMAFUSION on hand for YOUR patients . . . ORDER DPS Formula 111 TODAY.

specify dartell

hemafusion

dps formula 111

AVAILABLE IN BOTTLES OF:
90 tablets . List Price $ 4.00
500 tablets . . List Price $21.00

DARTELL LABORATORIES
1226 South Flower Street. Los Angeles 15, Calif.

ELEGANT ACCURACY

MODERN Office decor calls for equally handsome equipment. The new TYCOS* Desk Aneroid combines traditional TYCOS accuracy with real elegance. Its beautiful case is solid walnut, hand rubbed to a velvet finish, with satin finished brass trim. The 3⅜" ivory tinted dial is easy to read, and notice the easel . . . you can adjust it to any angle.

Best of all, of course, it gives you accurate, dependable readings. The long pointer gives you a magnified pulse wave and maximum sensitivity. You can be sure it's accurate as long as the pointer returns within zero—an easy visual check. Our 10-year warranty assures you that it will remain accurate unless misused. If thrown out of adjustment during the 10-year warranty period, we'll re-adjust the manometer only free, exclusive of replaced broken parts.

Exclusive hook cuff fits any size adult arm, goes on and off quickly and easily. Stainless steel ribs prevent ballooning.

You can see this handsome new TYCOS Aneroid at your surgical supply dealer. Why not order one for your desk and keep your pocket Aneroid in your bag for outside calls.

Price only $49.50.

Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

Romeo, Joseph M.
Rosen, Alvin
Sabato, Joseph A.
Schaffer, Mortimer
Scharf, Benjamin C.
Schreibman, Walton Marvin
Schwartz, Gerson
Schwartz, Theodore
Shapiro, Daniel M.
Silver, Morton
Simon, David J.
Stettler, William C.
Stoll, Selma
Sweigart, Jacob K., III
Tenenbaum, Irving
Tepper, Albert
Terzigni, Bernard James
Tridico, William Joseph
Wallach, Marvin M.
Weinberg, Hyman William
Wheeler, Francis S.
Whitehouse, Robert T.
Whitenight, John William
Zwiebel, Robert J.

Books Received

MORRIS' HUMAN ANATOMY. A Complete Systematic Treatise. Edited by J. Parsons Schaeffer, A.M., M.D., Ph.D., Sc.D., D.Litt., Professor of Anatomy and Director of The Daniel Baugh Institute of Anatomy, Emeritus, The Jefferson Medical College. Ed. 11. Cloth. Pp. 1718, with illustrations. Price $16.00. The Blakiston Co., Inc., 575 Madison Ave., New York 22, 1953.

CLINICAL ENDOCRINOLOGY. By Lewis M. Hurxthal, M.D., F.A.C.P., Head of the Department of Internal Medicine, Lahey Clinic, Boston; Physician, New England Baptist and New England Deaconess Hospitals, Boston; and Natalija Musulin, B.S., M.D., Staff of Cooper Hospital, Camden, N. J. Cloth. Pp. Vol. I, 749; Vol. II, 1599, with illustrations. Price $24.00. J. B. Lippincott Co., E. Washington Sq., Philadelphia 5, 1953.

DERMATOLOGY IN GENERAL PRACTICE. By Jacob Hyams Swartz, M.D., Assistant Professor of Dermatology, Harvard Medical School and Post-graduate School; Consulting Dermatologist, Massachusetts General Hospital; Member American Dermatological Association, American Mycological Association; Diplomate American Board of Dermatology. Cloth. Pp. 581, with illustration. Price $11.00. The Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1953.

AN ATLAS OF SURGICAL EXPOSURES OF THE EXTREMITIES. By Sam W. Banks, M.D., Associate Professor of Orthopaedic Surgery, Northwestern University Medical School; Attending Orthopaedic Surgeon, Chicago Memorial Hospital and Woodlawn Hospital; and Harold Laufman, M.D., Ph.D., Associate Professor of Surgery and Director of Experimental Surgery, Northwestern University Medical School; Associate Attending Surgeon, Michael Reese Hospital. Cloth. Pp. 391, with illustrations. Price $15.00. W. B. Saunders Co., W. Washington Sq., Philadelphia, 1953.

DISEASES OF THE DIGESTIVE SYSTEM. Edited by Sidney A. Portis, B.S., M.D., F.A.C.P., Associate Clinical Professor of Medicine, University of Illinois Medical School; Senior Attending Physician in the Department of Medicine, Michael Reese Hospital; Consulting Physician, Cook County Hospital; Member of Advisory Board of Institute of Psychoanalysis; Chief of the Medical Services of the Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital, Chicago, Ill. Ed. 3. Cloth. Pp. 1119, with illustrations. Price $20.00. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1953.

OPERATIVE GYNECOLOGY. By Richard W. Te Linde, Professor of Gynecology, Johns Hopkins University and Chief Gynecologist, Johns Hopkins Hospital. Ed. 2. Cloth. Pp. 902, with illustrations. Price $20.00. J. B. Lippincott Co., E. Washington Sq., Philadelphia 5, 1953.

CLINICAL DIAGNOSIS BY LABORATORY METHODS. A Working Manual of Clinical Pathology. By James Campbell Todd, Ph.B., M.D., Late Professor of Clinical Pathology, University of Colorado School of Medicine; Arthur Hawley Sanford, A.M., M.D., Emeritus Professor of Clinical Pathology, The Mayo Foundation, University of Minnesota; Emeritus Member, Division of Clinical Laboratories, The Mayo Clinic; Director of Laboratories, Rochester State Hospital; and Benjamin B. Wells, M.D., Ph.D., Professor of Medicine, Department of Medicine, School of Medicine, University of Arkansas. Cloth. Pp. 998, with illustrations. Price $8.50. W. B. Saunders Co., W. Washington Sq., Philadelphia, 1953.

FUNCTIONAL AND SURGICAL ANATOMY OF THE HAND. By Emanuel B. Kaplan, M.D., F.A.C.S., Assistant Professor of Anatomy, College of Physicians and Surgeons, Columbia University; Attending Orthopedic Surgeon of the Hospital for Joint Diseases; Attending Orthopedic Surgeon of the Lebanon Hospital; Medical Director, Beth Abraham Home, New York City. Cloth. Pp. 288, with illustrations. Price $10.00. J. B. Lippincott Co., E. Washington Sq., Philadelphia 5, 1953.

IMMUNITY. Hypersensitivity Serology. By Sidney Raffel, Sc.D., M.D., Professor of Bacteriology, Department of Bacteriology and Experimental Pathology, Stanford University School of Medicine. Cloth. Pp. 531, with illustrations. Price $8.00. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1953.

CHRONIC PULMONARY EMPHYSEMA. Modern Medical Monographs 8. Physiopathology and Treatment. By Maurice S. Segal, M.D., Clinical Professor of Medicine, Tufts College Medical School; Director, Department of Inhalational Therapy, Boston City Hospital; and M. J. Dulfano, M.D., Resident, Department of Inhalational Therapy, Boston City Hospital; Research Fellow in Medicine, Tufts College Medical School. Cloth. Pp. 180, with illustrations. Price $5.50. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

PHYSICAL EXAMINATION OF THE SURGICAL PATIENT. By J. Engelbert Dunphy, M.D., F.A.C.S., Associate Clinical Professor of Surgery, Harvard Medical School; Surgeon, Peter Bent Brigham Hospital; Consultant in Surgery, Children's Medical Center; and Thomas W. Botsford, M.D., F.A.C.S., Clinical Associate in Surgery, Harvard Medical School; Senior Associate in Surgery, Peter Bent Brigham Hospital; Associate in Surgery, Children's Medical Center. Cloth. Pp. 326, with illustrations. Price $7.50. W. B. Saunders Company, W. Washington Sq., Philadelphia, 1953.

PHYSIOLOGICAL AND THERAPEUTIC EFFECTS OF CORTICOTROPIN (ACTH) AND CORTISONE. By Dwight J. Ingle, B.S., M.S., Ph.D., Senior Research Scientist (Physiologist) Research Laboratories, the Upjohn Company, Kalamazoo, Michigan; and Burton L. Baker, B.A., M.S., Ph.D., Professor of Anatomy, University of Michigan Medical School, Ann Arbor, Michigan. Cloth. Pp. 172, with illustrations. Price $5.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1953.

CONTACT DERMATITIS. By George L. Waldbott, M.D., F.A.A.A., F.A.C.A., F.I.A.A., F.A.C.P., Senior Physician, Harper Hospital; Chief of Division of Allergy, Assistant Physician, Grace Hospital; Chief of Allergy Clinic, Formerly, Director of Allergy Clinic, Children's Hospital of Michigan; Formerly Consultant Allergist, St. Mary's Hospital and North End Clinic, Detroit, Michigan. Cloth. Pp. 218, with illustrations. Price $8.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1953.

FUNCTIONAL DISORDERS OF THE FOOT. Diagnosis and Treatment. By Frank D. Dickson, M.D., F.A.C.S., Clinical Professor of Surgery, University of Kansas School of Medicine; Orthopedic Surgeon, St. Luke's, Kansas City General, and Wheatley Hospitals, Kansas City, Missouri, and Providence Hospital, Kansas City, Kansas; and Rex. L. Diveley, A.B., M.D., F.A.C.S., Assistant Professor Orthopedic Surgery, University of Kansas School of Medicine; Chief Orthopedic Consultant, Veterans Administration, Washington, D. C.; Chief Orthopedic Surgeon, Kansas City General Hospital; Orthopedic Surgeon, St. Luke's and Wheatley Hospitals, Kansas City, Missouri, and Providence Hospital, Kansas City, Kansas. Ed. 3. Cloth. Pp. 345, with illustrations. Price $6.75. J. B. Lippincott Co., E. Washington Sq., Philadelphia 5, 1953.

OFFICE ORTHOPEDICS. By Lewis Cozen, M.D., F.A.C.S., Attending Orthopedic Staff: The Orthopedic Hospital, Veteran's Hospital, Los Angeles County Hospital, Cedars of Lebanon Hospital, Los Angeles, and Los Angeles Tuberculosis Sanitarium, Monrovia, California; Assistant Professor of Orthopedic Surgery, College of Medical Evangelists, Los Angeles. Cloth. Pp. 304, with illustrations. Price $5.50. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1953.

STRESS AND DISEASE. By Harold G. Wolff, M.D., Professor of Medicine (Neurology) Cornell University Medical College; Attending Physician, New York Hospital, New York, New York. Cloth. Pp. 199, with charts and figures. Price $5.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1953.

NASAL SINUSES. An Anatomic and Clinical Consideration. By O. E. Van Alyea, M.D., Associate Clinical Professor, Department of Laryngology, Rhinology, and Otology,

FIRST PUT NEPHENALIN UNDER TONGUE. Leave the tablet there for 5 minutes. 10 mg. of sublingual aludrine is rapidly absorbed from the coating, exerts a powerful broncho-dilating effect, often within 90 seconds.

THEN SWALLOW NEPHENALIN TABLET. Classic ephedrine-theophylline-phenobarbital combination in nucleus prolongs for 4 hours the immediate anti-asthmatic effect of sublingual aludrine absorbed from the purple coating.

For asthma relief in 90 seconds ...lasting 4 hours

NEPHENALIN tablets are: (1) *Better for routine protection.* 3 tablets protect all day. (2) *Ideal emergency medication.* Easily administered without even a glass of water ... and NEPHENALIN is much less expensive than aerosol or injection therapy. NEPHENALIN is supplied in snap-cap vials of 20 and bottles of 100 square purple tablets.

Nephenalin® TABLETS

most convenient anti-asthmatic, provide:

SUBLINGUAL	ENTERIC	
Aludrine (N-isopropylarterenol HCl), 10 mg. (in purple coating)	Theophylline	2 grs.
	Ephedrine sulfate	3/8 gr.
	Phenobarbital	1/8 gr.

Thos. Leeming & Co. Inc., 155 East 44th Street, New York 17.

Be Prepared!
KEEP A VIAL ON HAND FOR EMERGENCIES!
INDICATED:
POSTPARTUM HEMORRHAGE
UTERINE BLEEDING
PROSTATECTOMY
TONSILLECTOMY
EPISTAXIS
ORAL AND NASAL SURGERY
GASTRIC ULCER
Chatham
KOAGAMIN
U.S. PAT. OFF. AND
PARENTERAL
KOAGAMIN, potent parenteral hemostatic acts fast in minutes. But every second counts in hemorrhage — keep it handy!
KOAGAMIN acts fast by its direct action on the blood unlike vitamin K, useful only in low blood prothrombin and often requiring hours to take effect. In such cases, use KOAGAMIN in addition to vitamin K, for faster control.
in 10 cc. diaphragm stoppered vials
KOAGAMIN STOPS HEMORRHAGE IN MINUTES
Aqueous solution of lactic and malonic acids for parenteral use
PREOPERATIVELY minimizes oozing
POSTOPERATIVELY controls secondary bleeding
THERAPEUTICALLY aids control of internal bleeding
Comprenensive dosage chart on request
Chatham
Available Through Your Physician's Supply House or Pharmacist
CHATHAM PHARMACEUTICALS, INC. NEWARK 2, NEW JERSEY, U.S.A.

University of Illinois College of Medicine, Chicago. Ed. 2. Cloth. Pp. 327, with illustrations. Price $9.00. The Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore, 1951.

HISTORY OF ANESTHESIA, With Emphasis on the Nurse Specialist. By Virginia S. Thatcher, Editor, American Association of Nurse Anesthetist Publications. Cloth. Pp. 289, with illustrations. Price $5.00. J. B. Lippincott Co., East Washington Sq., Philadelphia 5, 1953.

RECURRENT DISLOCATION OF THE SHOULDER. By James A. Dickson, M.D., Chief, Department of Orthopedic Surgery, Cleveland Clinic and Cleveland Clinic Hospital; Alfred W. Humphries, M.D., Department of Orthopedic Surgery, Cleveland Clinic and Cleveland Clinic Hospital; and Harry W. O'Dell, M.D., Chief, Department of Orthopedic Surgery, Akron Clinic. Cloth. Pp. 158, with illustrations. Price $4.50. The Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore, 1953.

INVESTMENTS FOR PROFESSIONAL PEOPLE. By Robert U. Cooper, B.P.E., M.A., M.D. Cloth. Pp. 342. Price $4.00 The Macmillan Co., 60 Fifth Ave., New York 11, 1953.

THE CONCEPTION OF DISEASE, Its History, Its Versions and Its Nature. By Walther Riese, M.D. Cloth. Pp. 120. Price $3.75. Philosophical Library, Inc., 15 E. 40th St., New York, 1953.

GOUT AND GOUTY ARTHRITIS. Modern Medical Monographs 7. By John H. Talbott, M.D., Professor of Medicine, The University of Buffalo School of Medicine; Physician-in-Chief, Buffalo General Hospital, Buffalo, New York. Cloth. Pp. 92, with illustrations. Price $4.00. Grune & Stratton, Inc., Medical Publishers, 381 Fourth Ave., New York 16, 1953.

SACRAL NERVE-ROOT CYSTS, Another Cause of the Sciatic or Cauda Equina Syndrome. By I. M. Tarlov, M.D., Professor of Neurology and Neurosurgery, New York Medical College, New York City. Cloth. Pp. 134, with illustrations. Price $6.50. Charles C Thomas, Publisher, Springfield, Ill., 1953.

WILLIS HAVILAND CARRIER, FATHER OF AIR CONDITIONING. By Margaret Ingels. Cloth. Pp. 170. Price $2.50. Country Life Press, Garden City, New York, 1952.

THE CURRENT SITUATION IN RESPIRATORY CANCER*

In the Nation's urban population, which has readiest access to the best diagnostic facilities, cancer now leads all other diseases of the respiratory tract as a cause of death among white males. According to the experience among the Industrial policyholders of the Metropolitan Life Insurance Company in 1950-1951, the death rate from respiratory cancer among insured white males at ages 1 to 74 years was 25.7 per 100,000, compared with 21.9 for respiratory tuberculosis and 14.6 for pneumonia. Among

*Reprinted from *Statistical Bulletin, Metropolitan* Life Insurance Co., February, 1953.

For CONSTIPATED BABIES
A gentle laxative mudifier of milk. One or two tablespoonfuls in day's formula — or in water for breast fed babies — produce marked change in stool. Send for samples.
Borcherdt
MALT SOUP
Extract*
*Specially processed malt extract neutralized with potassium carbonate.
GOOD FOR GRANDMA, TOO!
New Dietary Management
For CONSTIPATED ELDERLY
Dose:
1-2 Tablespoonfuls AM and PM. Send for samples
SEND FOR SAMPLE
BORCHERDT MALT EXTRACT CO., 217 N. Wolcott Ave., Chicago 12, Ill.

older men, at ages 45 to 74, the differences are even more striking, the rate being 109.0 per 100,000, as against 72.1 for respiratory tuberculosis and 51.0 for pneumonia. Even among white women at these older ages the death rate from respiratory cancer is higher than that from respiratory tuberculosis, the figures being 13.1 and 11.3 per 100,000, respectively.

In the general population of the United States, too, white males in the aggregate now experience a higher death rate from respiratory cancer than from respiratory tuberculosis. The excess was small in 1950, when the ranking of the two diseases was reversed, but it has since widened materially as a result of the upward trend in the mortality from the malignancies and the continued rapid decline in the toll from tuberculosis. The excess in the recorded mortality from respiratory cancer is greatest in those States which have the most abundant medical facilities or, as in the prairie regions, in which the death rate from tuberculosis is well below the average for the country as a whole.

The level of the death rates from respiratory cancer shows wide variation over the United States. In general, they are highest in the Northeast and lowest in the South, the maximum rates among white males being approximately six times the minimum figures. These geographic variations reflect, in part at least, differences in the age, sex, and color composition of the population, as well as differences in resources for case finding.

The recorded increase in respiratory cancer has by no means been limited to our country. In England and Wales, for example, the rates have been rising steadily and are considerably higher than they are here. In 1949 the death rate among British males was 49.4 per 100,000, compared with 25.2 among white males in the United States, allowance being made for differences in the age distribution of the two groups. For females, the corresponding figures were 9.9 for England and Wales and 6.9 for the United States. In none of our States are the rates as high as in Britain.

Morbidity data on cancer are lacking for the country as a whole, but such information is available for 10 major cities through surveys made in 1947 and 1948 by the National Cancer Institute with the cooperation of State and county medical societies. †Similar studies had been made in these areas about a decade earlier. The recent figures show that in 3 of the 10 cities the incidence of new cases of respiratory cancer reported among males exceeded 40 per 100,000, and in only two cities was it under 30. Among females,

†*Cancer Morbidity Series*, Public Health Service, National Cancer Institute of the National Institutes of Health, 1952. The 10 cities are: Philadelphia, Pittsburgh, Detroit, Chicago, Atlanta, Birmingham, New Orleans, Dallas, Denver, and San Francisco.

Common Denominator:

PRURITUS

Common Treatment:

CREMACAL

PROTECTIVE ANTIPRURITIC OINTMENT

The special water-miscible base dries as a protective film. No bandaging required. Washes off easily.

Calamine, 10%; glycerine, 5%; benzocaine, 1%; phenol, 0.5%; menthol, 0.25%

NUMOTIZINE, Inc., Chicago

SPRAY QUICK RELIEF FROM SURFACE PAIN AND ITCHING . . . .

Americaine **AEROSOL**

Automatic Spray Topical Anesthetic
Containing 20% Dissolved Benzocaine

Burns
Eczemas
Debridement of Wounds
Lacerations
Rectal Examinations
Post-episiotomies
After Removal of Tape

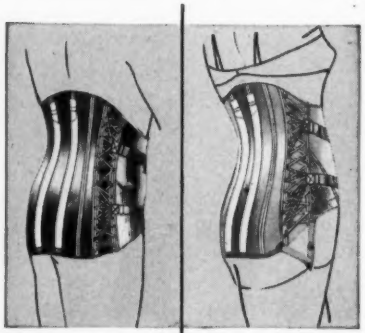
ALSO AVAILABLE—Americaine Topical Anesthetic Ointment "Clear" and "With Chlorophyll." Samples on request.

ARNAR-STONE LABORATORIES, INC.
(Formerly Named Americaine, Inc.) 1316 Sherman Ave., Evanston, Ill.

PRESCRIBE WITH CONFIDENCE...

Freeman

BACK SUPPORTS



FOR MEN FOR WOMEN

Working closely with the medical profession for more than 60 years, Freeman has developed a line of surgical supports from which you can select and prescribe with complete confidence in the suitability of the garment for its purpose, quality in its construction and comfort for the wearer.

The Freeman line of corset-type back supports includes models which provide supportive and conservative measures in any required degree up to almost complete immobilization. This type of support has been found superior in that it can be worn comfortably whether sitting, standing or lying. In addition to correct design and quality construction Freeman supports embody many advancements and improvements. Linings and stay covers are cushioned for comfort and side-laced back supports have a new and exclusive self-smoothing, nonwrinkle fly.

Mail coupon for details of Freeman quality features and free copy of pocket-size reference catalog.

FREEMAN MANUFACTURING CO.
Dept. 606, Sturgis, Michigan

Please send information about Freeman features and free copy of reference catalog.

Name .....

Address .....

City..... State.....

Classified Ads

ADDRESS ALL BOX NUMBERS THE JOURNAL, c/o A.O.A.
212 E. OHIO ST., CHICAGO 11, ILLINOIS

BASIC SCIENCE COURSE IN E.E.N.&T.
FIFTY HOURS OF ANATOMY-PATHOLOGY-PHARMACOLOGY
COLLEGE OF OSTEOPATHIC PHYSICIANS AND SURGEONS
OCTOBER 12 to 21, 1953 TUITION $150
FOR FURTHER INFORMATION AND APPLICATION BLANK WRITE TO:
Lorraine Nash, Executive Secretary
Graduate School
1721 Griffin Avenue
Los Angeles 31, Calif.

WANTED: Internes—Bangor Osteopathic Hospital, Bangor, Maine. Apply internes committee. Desirable locations available. "Open staff" institution.

GUARANTEED reconditioned x-ray, electromedical and electrocardiograph equipment available at all district offices—United States and Canada. Deal directly with factory organization, all sales and service personnel factory-trained, prices include installation and operating instructions. Write to RND-100 General Electric Company, X-Ray Department, 4855 Electric Avenue, Milwaukee 1, Wisconsin.

SURGEON: Wishes location for general surgery. Finishing A.C.O.S. approved training September '53. Seven years general practice before specializing. Write Box 3531.

FOR SALE: General practice in North Jersey. Fifteen minutes from osteopathic hospital. Gross $14,000 first year. Very small investment. Box 6543.

WANTED: General practice or association, graduated June 1951, approved internship, licensed in New York, Iowa and Pennsylvania. Write Box 6544.

WANTED: Young physician finishing internship to cover busy rural practice for two weeks in June or July. Must have Pennsylvania license and car. Good remuneration with living quarters for family. Write Dr. R. J. Johns, Box 228, Millerstown, Pa.

FOR SALE: Brand new Eureka Rotating Anode 1.5-mm. tube with starter. Never used. Also Colwill Intermittent Venous Occlusion apparatus, like new. Best offer. Box 6545.

FOR SALE: New Hugh Young X-Ray cystoscopic table with 100 MA GE X-Ray unit, also cystoscopes and Nesbit Resectoscope. Write Box 6542.

HOUSE AND PRACTICE FOR SALE: Gross annual income over $20,000.00. Moving back to home town within 90 days. Located in small growing town 22 miles east of Cincinnati. Financing can be arranged regardless of size of down payment. More details upon request. Box 6547.

YOUNG GENERAL PRACTITIONER desires affiliation with clinic, group, or another doctor. Would prefer southwest or west U.S. Box 6546.

PRACTICE FOR SALE for the price of equipment. Home also available. Practice grosses $25,000 in Western Pennsylvania town, 9 miles from the hospital. Reason for leaving—taking residency. Box 6531.

INTERNS WANTED: Beginning July 1, A.O.A. approved for intern training. Traverse City Osteopathic Hospital, Traverse City, Mich.

ANESTHETIST WANTED—For small hospital, varied duties. Certification required at start. New Mexico or Michigan license. Box 6537.

WANTED: Obstetrician to head department—established group and hospital—Eastern state—should be certified or of comparable experience. Established practice—unusual potential. Immediate assured income commensurate with training and ability. Write Box 6541.

WANTED—Capable surgeon for congenial established clinical group, with several referring doctors. Must be willing to buy ⅓ interest in building and equipment. Strictly modern air conditioned building well equipped. Complete X-Ray Dept. and State approved clinical laboratory and O.B. Department. Large O.B. and O.R. Rooms. 22 Beds, 6 Bassinets, normal capacity. A bargain at $35,000. Cash and terms. A surgical practice all ready to step into! Present surgeon retiring because of health. Box 5537.

FOR SALE: Private general hospital, ten beds, fully equipped, good tourist and local business, Daytona Beach, Florida. Good lease, low overhead and rent. Present operator going into specialization. Price $20,000, good terms. Write Doctors' Hospital, Inc., 700 Daytona Ave., Holly Hill, Florida.

OFFICE AVAILABLE in Northwest Missouri county seat town, has exceptionally large trade area which is osteopathic minded. Excellent opportunity to build practice. Write Gus Sanders, 5000 Oak St., Kansas City, Mo.

WANTED: General practitioner to assume active practice during August, possibly longer if satisfactory. Excellent remuneration. Box 5532.

OPENINGS FOR GENERAL PRACTICE available in Wayne County, Ohio. New osteopathic hospital now being built. For information address inquiry to Orrville Community Osteopathic Hospital, Inc., Att.: Medical Director, Orrville, Ohio.

FOR SALE: X-Ray cabinets 14x17, 3-drawer, steel, full suspension $73.00. 4-drawer letter file, suspension, $49.60. Write us for 28-page catalog on filing equipment and storage cabinets. We also have lockers and desks, and all types of heavy duty vibrators, physiotherapy equipment, surgical furniture and x-ray accessories. Write for catalog. Hanley Medical Equipment Co., 5614 S. Grand, St. Louis 11, Mo.

GENERAL SURGEON: Amicable, willing to work, desires congenial association or group. Eligible for certification. Foreign P. G. work in heavy surgery and urology. Write Box 12527.

FOR SALE OR LEASE: Active Eye, Ear, Nose and Throat practice in good industrial area. Write Box 15311.

OPPORTUNITIES — Unlimited, for General Practice in Oklahoma. Use a 20-bed hospital and become a part of the great, growing Southwest. Write Box 3533.

NORTH CAROLINA needs strictly manipulative physicians NOW!! Marvelous climate! Excellent opportunity. For full information write S. D. Foster, D.O., Secretary North Carolina Osteopathic Society, Inc., 710 Public Service Bldg., Asheville, N. C. Reciprocity with most states.

FOR SALE: Cameron Heartometer, used about five or six times. Good as new. On account of ill health will sell at a sacrifice. Box 6548.

OPHTHALMOLOGY - OTORHINOLARYNGOLOGY — Beginning August 1, 1953, two year traineeship designed to meet first requirements of specialization and certification. First year—clinical training under supervision of senior trainee and attending staff; second year—under supervision of attending staff. Training includes fifty hours of basic science work. At least one year approved internship required. For further particulars address: Dr. Charles A. Blind, Executive, E.E.N.T. Department, General Osteopathic Clinic, College of Osteopathic Physicians and Surgeons, 1721 Griffin Avenue, Los Angeles 31, California.

the incidence was considerably less—generally about 8 to 9 per 100,000. In all 10 cities the incidence of respiratory cancer in both sexes increased much faster than that of all cancers combined in the decade between the two surveys, doubling or even tripling in several cities.

In the present state of knowledge it is difficult to account for the recorded increase in the mortality and morbidity from respiratory cancer, or even to determine how much of the rise is real. Improved techniques for diagnosis and the greatly increased frequency of their use have resulted in many cases being detected and reported which, in the past, would have been overlooked. This applies especially to diagnostic X rays in medical and hospital practice. Mention, too, should be made of the increase in the number of physicians with training and experience in this field. Contributing in a lesser way to the more frequent discovery of cancer of the respiratory tract is the increasing use of the bronchoscope and of cytological examination of lung secretions.

The wide variation in the frequency of respiratory cancer has led to an increasingly intensive search for environmental factors that may be contributing to the recorded increase in the disease. A number which have been suggested as implicated in its genesis are under study. They range from a few which have been shown to produce lung cancer to others for which the evidence is meager. Thus, on the one hand, it is fairly well established that radioactive materials and some chromates cause lung cancer in experimental animals and in men in certain occupations. On the other hand, the suggestion that the increase in air pollution may be a factor is unsupported by any real evidence. The role of other factors, such as coal tar products, excessive tobacco smoking, and specific contaminants, is still far from conclusive. Actually, the study of the influence of environment on cancer involves the evaluation of numerous factors over a long period of time, and accurate data required for such investigations are often difficult, if not impossible, to obtain. Consequently, substantial progress in investigations of this kind is likely to be slow.

In the circumstances, whatever success can be achieved in the control of respiratory cancer depends mainly upon continuing popular education in the symptoms of the disease and the promotion of measures for early detection and treatment. Periodic medical and X-ray examinations of every person is the most productive means of detecting cases early. Since in practice it is almost impossible to attain this goal, it is vital that routine X-ray examination of the chest be practiced more widely, particularly among men over age 35. Mass X-ray campaigns also should concentrate greater effort on bringing in more men who have reached the main cancer ages.

"magic"
in
a
syringe

vi-syneral injectable

the first aqueous multivitamin parenteral solution

The old saying "oil and water can't mix" is no longer true. In Vi-Syneral Injectable—through the "magic" of a process* developed by U. S. Vitamin Corporation—the oil-soluble vitamins (A, D and E) are in aqueous solution, plus vitamin C and B complex factors.

Particularly valuable in severe deficiencies and where gastrointestinal absorption is impaired.

- for more rapid, complete and certain absorption
- speedier tissue replenishment
- ready for intramuscular injection
- negligible local reactions

Each 2 cc. dose provides in aqueous solution:

Vitamin A (natural)	10,000 Units
Vitamin D (calciferol)	1,000 Units
dl, Alpha-Tocopherol (E)	2 mg.
Ascorbic Acid (C)	50 mg.
Thiamine HCl (B_1)	10 mg.
Riboflavin (B_2)	1 mg.
Niacinamide	20 mg.
Pyridoxine HCl (B_6)	3 mg.

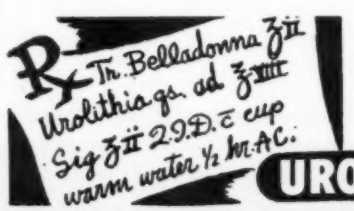
Boxes of 1, 6, 25 and 100—10 cc. vials.
Also, 2 cc. ampuls, boxes of 6, 25, 100 and 500.

new ▶ 10 cc. multiple dose vials • saves as much as 45%

Samples and literature upon request.

u. s. vitamin corporation
Casimir Funk Laboratories, Inc. (affiliate)
250 East 43rd Street • New York 17, N. Y.

*same exclusive process (U. S. Pat. No. 2,417,299) as used in making AQUASOL A Capsules, VI-AQUA and VI-SYNERAL VITAMIN DROPS and other "oil-in-water" preparations.



BETTER CONTROL with LESS CONTROL

in CHRONIC URINARY INFECTIONS

A self-acidifying methenamine urinary antiseptic permitting high dosage without toxicity. Quickly soothes inflamed mucosa. Bacteriostatic against E. Coli, S. Albus, S. Aureus. Requires no periodic blood tests, etc. May be prescribed alone or with suitable antispasmodics and sedatives as individually required—tr. belladonna, tr. hyoscyamus, phenobarbital, etc. Especially useful for older patients. Send for samples.

COBBE PHAR. DIV.—BORCHERDT MALT EXTRACT CO.
217 N. Wolcott Ave. Chicago 12, Illinois

COMPLETE

Control

of MUSCLE SPASM!

USE THE NEW, COMPLETE, MORE EFFECTIVE, LESS TOXIC SPASMOLYTIC and ANALGESIC COMPOUND

SAL-MEPHSON

Write TODAY for Clinical Samples and literature.

Each SAL-MEPHSON Tablet provides:
Mephenesin.....(4 gr.) 260 mg
Salicylamide.....(2 gr.) 130 mg
Physostigmine Salicylate....0.25 mg
Homatropine Methylbromide..0.60 mg

S. J. TUTAG & Company *Pharmaceuticals*
19180 MT. ELLIOTT AVENUE
DETROIT 34, MICHIGAN

TUTAG

DOCTOR... save on your drug and supply needs!

mail this coupon for current catalog

PHYSICIANS' DRUG & SUPPLY CO.
Third and Callowhill Sts., Philadelphia 6, Pa.
Please send me your Current catalog.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

FUNGICIDE
GERMICIDE ANTIPRURITIC

DERMYCIN

Laboratory and clinical investigations have *proved* Dermycin effective against a variety of skin-infecting bacteria and fungi.

Indications for its use include:
TINEA INFECTIONS
("athlete's foot," tinea capitis, Dhobie itch, etc.)
PRURITUS ANI
(of fungus origin)
ACNE VULGARIS
IMPETIGO
DERMATITIS VENENATA
(as ivy, oak poisoning)
MINOR SURGERY

Dermycin is so useful, so *versatile*, it appeals to specialist and general practitioner alike.

In all cases the area must be washed with mild white soap and water. Dry and apply Dermycin at least twice a day, or as a wet dressing where indicated.

Supplied in 1, 2, 8 and 16 fl. oz. bottles.
(Dermycin is not advertised to the laity.)
Write for professional sample.

CHAL-YON CORPORATION
65 PINE STREET NEW YORK 5, N. Y.

Look to **MEDICAL FABRICS**

MANUFACTURERS OF

E-L-A-S-T-I-C

BANDAGES and DRESSINGS

Presso®
ALL COTTON ELASTIC BANDAGE
THESE BANDAGES are made from fine quality yarns, to insure the correct and continued degree of elasticity and support. Available in:
NATURAL and FLESH COLOR. Sizes: 5½ Yds. (Stretched) x 2", 2½", 3", 3½", 4", 5", 6", 8", 10".

Pressoplast®
THE E-L-A-S-T-I-C ADHESIVE BANDAGE
Two Types
FLESH COLOR — CUT EDGE
NATURAL — FEATHER EDGE
Available in Individual and Hospital Packages.

Presso®-L
RUBBER REINFORCED ELASTIC BANDAGE
REINFORCED with rubber thread to insure continued degree of elasticity and pressure.
FEATHER EDGE prevents slipping. Available in:
NATURAL and FLESH COLOR. Sizes: 5½ Yds. (Stretched) x 2", 2½", 3", 4", 6".

Pressoplast®
E-L-A-S-T-I-C ADHESIVE
FINGER DRESSINGS
STICK PADS (Oil Resistant)
STICK TAPE
WOUND PATCHES
4-WING DRESSINGS
TEST PATCHES

Presso®-Lastic

CONTURA ® BANDAGE
UNA-GEL ® BANDAGE

LITERATURE, SAMPLES, PRICES ON REQUEST

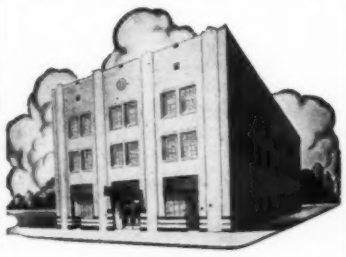
Medical Fabrics Co., Inc.
PATERSON 1, NEW JERSEY

UROLOGY

Special attention to Prostate conditions, including Trans-Urethral resection.

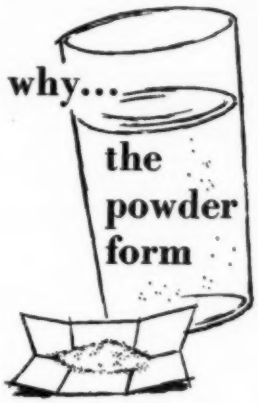
GASTRO-INTESTINAL

Special attention to resistant colon and rectal conditions.



(Established 1933)

Devine Bros. Hospital
(Osteopathic)
918 Oak, Kansas City 6, Mo.



For good reason FELSOL has steadily maintained a powder form dosage, despite the current demand for tablets and capsules.

Recent studies* emphasize why there is more pharmaceutical sense than meets the eye in powder form medication. The principle demonstrated is simply this: *in any given medicine, the smaller the particle size, the greater the rate of absorption because of increased surface area* Having a larger surface area, medicinal ingredients in powder form display higher solution rates and more effective activity.

Since prompt action is of the essence in symptomatic treatment of ASTHMA, HAY FEVER, and other bronchial allergic disease states, FELSOL in finely ground powder form insures quick and complete absorption.

Gratifying relief from distressing respiratory and related symptoms thus comes swiftly and surely

Professional samples and literature gladly sent upon request.

* J V SWINTOSKY ET AL. JO AMER PHARM ASSOC 38.6:308-13 JUNE 1949

AMERICAN *Felsol* COMPANY
LORAIN, OHIO

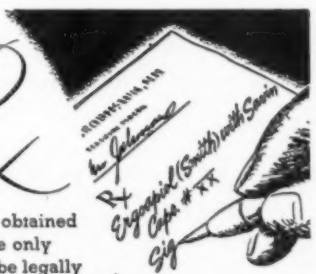
YOU CAN SAVE

June 1, 1953 was the beginning of a new fiscal year for the Association.

YOU CAN SAVE your Association considerable expense — postage, printing, paper, envelopes and clerical time —

BY PAYING YOUR DUES EARLY!

Only on your Rx



When prescribing Ergoapiol (Smith) with Savin for your gynecologic patients, you have the assurance that it can be obtained only on a written prescription, since this is the only manner in which this ethical preparation can be legally dispensed by the pharmacist. The dispensing of this **uterine tonic,** time-tested ERGOAPIOL (Smith) WITH SAVIN—only on your prescription—serves the best interests of physician and patient.

INDICATIONS: Amenorrhea, Dysmenorrhea, Menorrhagia, Metrorrhagia, and to aid involution of the postpartum uterus.

GENERAL DOSAGE: One to two capsules, three to four times daily—as indications warrant.

In ethical packages of 20 capsules each, bearing no directions.

Literature Available to Physicians Only.

ERGOAPIOL (SMITH) WITH SAVIN

Ethical protective mark, M.H.S., visible only when capsule is cut in half at seam.

MARTIN H. SMITH COMPANY
150 LAFAYETTE STREET
NEW YORK 13, N.Y.

*TWO-FOLD SERVICE —

To The Profession

Professional Foods continue to do their honest best to predicate the needs of the Osteopathic profession in correcting basic and fundamental

NUTRITIONAL TROUBLES

*Since the troubles arise largely in the CHRONIC PATIENT, we have planned our products to aid the doctor of this patient.

*We offer a complete and basic evaluation for the CHRONIC PATIENT at a considerable financial savings in order that treatment for the CHRONIC PATIENT can be directed properly from the start.

Write for added information.

PROFESSIONAL FOODS 219 First St. S.W., Cedar Rapids, Iowa

"A useful book that is needed for immediate help on those acute disorders that occur so often with dramatic suddenness. Tested aids on the emergencies in daily practice."

29 Illustrations $7.50
FOURTH EDITION; 590 pages;

Murphy MEDICAL EMERGENCIES

Medical practice meets many *acute* disorders—with many difficulties. Dr. Murphy's book is concentrated on the practical and immediate care of these acute disorders, written in the working language of cases . . . patients . . . facts . . . results. It gives diagnostic assistance to help you recognize the specific disorders . . . and a very thorough presentation of immediate treatment as it must be employed in the home, in the factory, or on the street.

By Francis D. Murphy, M.D., F.A.C.P., Professor and Head of Department of Medicine, Marquette University School of Medicine. Foreword by George Morris Piersol, M.D.

"This volume is an outstanding production in the literature of medical history. It is without a peer in the thoroughness with which it covers both ancient and prehistoric Medicine."

Connecticut State Medical Journal.
836 pages; 157 Illus. $6.00

Gordon MEDICINE THROUGHOUT ANTIQUITY

One of the few books in medicine for relaxed reading this book is an inspiring investigation of man's medical efforts in the early ages. Starting with the evidence left in caves, lake dwellings, and fossils, Dr. Gordon takes his reader through the documented past of ancient Egypt, Persia, China, Rome, India, Palestine—permitting modern man to view the medico cultural beginnings of human existence. Lavishly illustrated.

By Benjamin Lee Gordon, M.D., Member American Association of the History of Medicine. Foreword by Max Neuberger, M.D.

F. A. DAVIS COMPANY

PHILADELPHIA 3, PA.

In Canada: The Ryerson Press, Toronto

F. A. DAVIS COMPANY, 1914-16 Cherry St., Philadelphia 3
Please send and charge to my account—

☐ Medical Emergencies $7.50
☐ Medicine Throughout Antiquity 6.00

Name .....

Address .....

Advertisers' Index

American Bakers Assn. 3
American Felsol Co. 49
American Osteopathic Association 49
American Sterilizer Co. 21
Arnar-Stone Co. 45
Ayerst, McKenna & Harrison, Ltd. 5, 52

Borcherdt Malt Extract Co. 44, 47
Borden Co. 8
Bristol-Myers Co. ..... Cover II, 24
Burton, Parsons Co. 6

Carnation Co. 14
Central Pharmacal Co. 20
Chal-Yon Corp. 48
Chatham Pharmaceuticals, Inc. 44
Ciba, Pharmaceutical Products Inc. ..... Cover IV
Classified Ads 46
Columbus Pharmacal Co. 31

Dartell Laboratories 41
F. A. Davis Co. 50
Davol Rubber Co. 4
Desitin Chemical Co. 36
Devine Bros. 49

Endo Products, Inc. 37
Fellows Med. Mfg. Co. 18
Florida Citrus Commission 13
Freeman Mfg. Co. 46

General Electric Co. 27
Gerber's 33
Gomco Surgical Mfg. Corp. 9

Holland-Rantos Co. 22
Horlicks Corp. 10, 11

Irwin, Neisler & Co. 19

Keleket X-Ray Corp. 7

Lakeside Lab. 32
Lea & Febiger 22
Thos. Leeming & Co., Inc. 35, 43

S. E. Massengill 39
Medical Fabrics Co., Inc. 49
Philip Morris 28

Numotizine, Inc. 45

A. J. Parker Co. 20
Pelton & Crane Co. 34
Pet Milk Co. 26
Physician's Drug & Supply Co. 48
Picker X-Ray Corp. 1
Professional Foods 50

Raytheon Mfg. Corp. 12
Riker Lab. 15, 16, 17, 23
Ritter & Co., Inc. 38
Roerig, J. B. & Co. ..... Cover III

Saunders, W. B. Company ..... Cover 1
Shield Laboratories 25
Smith, Martin H., Co. 49
Stuart Company ..... Insert
Sunkist Growers 29

Taylor Instruments 42
S. J. Tutag Co. 48

U. S. Vitamin Corp. 47
Van Camp Laboratories 51
Vitaminerals, Inc. 30

Wocher, Max & Co. 31
Woodard Laboratories 40

Young, F. E. & Co., Inc. 20

STRAINED TUNA

. . . a valuable adjunct to many "soft" diets

Although originally packed for infant feeding, Strained Tuna Baby Food has been found valuable in diets of many older people. A high-protein food, it is easily digested and requires minimal mastication.

AVERAGE COMPOSITION		ESSENTIAL AMINO ACIDS (Values given as percent of protein)	
Total Solids	21.8 g	Arginine	5.2
Protein	20.8 g	Histidine	5.7
Fat	0.6 g	Isoleucine	4.7
Phosphorus	180 mg	Leucine	7.0
Iodine	10 mcg	Lysine	8.3
Fluorine	1.5 mg	Methionine	2.8
Choline	40 mg	Phenylalanine	3.5
Riboflavin	80 mcg	Threonine	4.1
Niacin	12 mg	Tryptophan	1.1
Animal Protein Factor (B_{12})	8 mcg	Valine	5.2
per 100 grams			
(94 calories per 100 grams, or 26.6 calories per ounce)			

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

Both brands the same high Quality

Van Camp Laboratories
Terminal Island, California

Please send samples and complete information on Strained Tuna Baby Food.

*Name*_____

*Address*_____

when nutritional reinforcement is necessary...

Today, the concept of interrelationship in nutrition is widely recognized. For this reason, when special restrictive diets are prescribed, the physician will usually tend to supplement dietary intake with the most complete vitamin-mineral formulation available. "Clusivol" is an ideal preparation for such therapy.

REDUCING DIETS
DIABETIC DIETS
GERIATRIC DIETS
POSTOPERATIVE DIETS
PEPTIC ULCER DIETS
LOW SODIUM DIETS
HEPATIC DISEASE DIETS
RHEUMATIC FEVER DIETS

2 "Clusivol" Capsules (average daily dosage) provide:

Vitamin A (synthetic)	25,000	U.S.P. Units
Vitamin D (irradiated ergosterol)	2,000	U.S.P. Units
Vitamin C (ascorbic acid)	150.0	mg.
Thiamine HCl (B_1)	10.0	mg.
Riboflavin (B_2)	5.0	mg.
Pyridoxine HCl (B_6)	1.0	mg.
Panthenol, equivalent to of calcium pantothenate	10.0	mg.
Vitamin B_{12} U.S.P. (crystalline)	2.0	mcg.
Folic acid	2.0	mg.
Nicotinamide	100.0	mg.
Vitamin E (as mixed tocopherols natural)	10.0	mg.
Inositol	30.0	mg.
Choline—from choline bitartrate	30.0	mg.
Biotin	0.1	mg.
d-Methionine	20.0	mg.
Cobalt—from cobalt sulfate	0.1	mg.
Copper—from copper sulfate	1.0	mg.
Fluorine—from calcium fluoride	0.025	mg.
Iron—from 4 gr. ferrous sulfate exsic.	76.2	mg.
Calcium—from dicalcium phosphate	165.0	mg.
Manganese—from manganous sulfate	1.0	mg.
Iodine—from potassium iodide	0.15	mg.
Molybdenum—from sodium molybdate	0.2	mg.
Potassium—from potassium sulfate	5.0	mg.
Zinc—from zinc sulfate	1.2	mg.
Magnesium—from magnesium sulfate	6.0	mg.
Phosphorus—from dicalcium phosphate	127.4	mg.

"CLUSIVOL"® **CAPSULES**

Multiple vitamin-mineral supplement

No. 293—Supplied in bottles of 100 and 1,000.

Ayerst, McKenna & Harrison Limited
New York, N. Y. • Montreal, Canada

3326

between "controlled starvation" and sound obesity management

"The treatment of obesity by diet, a system of controlled starvation, leaves the medical attendant with an obligation to maintain mineral balance as well as to avoid avitaminosis." [1]

AMPLUS not only helps maintain vitamin and mineral balance, but also avoids the gap between good intentions and cooperation with dextro-Amphetamine Sulfate.

[1] Vernon, S.: Nutritional Deficiency, Clin. Med., Oct., 1950, p. 187

AM PLUS

For sound obesity management,

DEXTRO-AMPHETAMINE SULFATE	5 mg.	POTASSIUM	1.7 mg.
CALCIUM	242 mg.	ZINC	0.4 mg.
COBALT	0.1 mg.	VITAMIN A	5000 U.S.P. Units
COPPER	1 mg.	VITAMIN D	400 U.S.P. Units
IODINE	0.15 mg.	THIAMINE HYDROCHLORIDE	2 mg.
IRON	3.33 mg.	RIBOFLAVIN	2 mg.
MANGANESE	0.33 mg.	PYRIDOXINE HYDROCHLORIDE	0.5 mg.
MOLYBDENUM	0.2 mg.	NIACINAMIDE	20 mg.
MAGNESIUM	2 mg.	ASCORBIC ACID	37.5 mg.
PHOSPHORUS	187 mg.	CALCIUM PANTOTHENATE	3 mg.

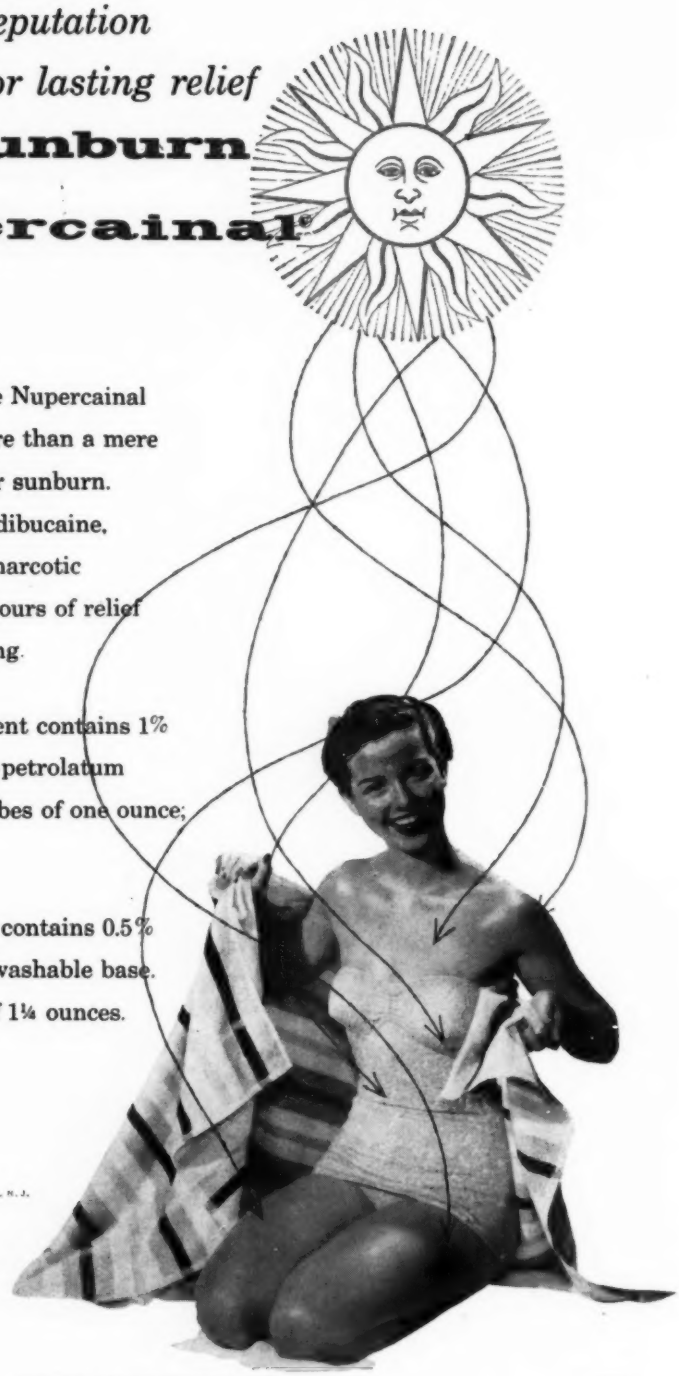
J. B. ROERIG AND COMPANY, 536 LAKE SHORE DRIVE, CHICAGO, ILL.

A lasting reputation
for lasting relief
in Sunburn
Nupercainal®

When you prescribe Nupercainal you provide much more than a mere cosmetic coating for sunburn. Nupercainal contains dibucaine, highly potent, non-narcotic anesthetic, affording hours of relief from pain and itching.

Nupercainal Ointment contains 1% dibucaine in a lanolin-petrolatum base. Supplied in tubes of one ounce; jars of one pound.

Nupercainal Cream contains 0.5% dibucaine in a water-washable base. Supplied in tubes of 1¼ ounces.



Ciba

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

NUPERCAINAL (DIBUCAINE OINTMENT AND CREAM)